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# The influence of subjective and objective knowledge of ecolabels on consumers' green purchasing practices

A study on young Swedish consumers

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# Abstract

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Understanding of consumers' green purchasing behaviour is a relevant topic for businesses around the world and an interesting research field, considering the issue of climate change. This study investigates the associations of young Swedish consumers' subjective knowledge, objective knowledge, confusion and information acquisition with regards to commonly found ecolabels. The purpose is to shed light on how these concepts are related to and influence consumers' green purchasing behaviour. Gaining insight into this topic could help businesses understand consumers' perception of ecolabels and by extension, how the ecolabels can be used to promote green consumption. Cross-sectional data were gathered from a sample of 320 consumers in May 2017. The data gathering was carried out through 3 surveys studying the aforementioned concepts in relation to the ecolabels of Fairtrade, the Euro Leaf and KRAV. This is the first study investigating this topic in the Swedish market. The main finding indicate that business should focus on influencing consumers' subjective knowledge, rather than objective, to incentivise a more environmental friendly purchasing behaviour. In addition, the findings confirm that theories from previous studies on other areas of knowledge are applicable to the topic of ecolabels as well. Additional theoretical and practical implications are discussed.

**Keywords:** Ecolabel, Consumer Purchasing Behaviour, Subjective Knowledge, Objective Knowledge

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# 1 Introduction

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Climate change, resulting in loss of natural resources, extinction of species and environmental damage, has been shown to largely be caused by emissions and waste (Greenpeace, 2015). A substantial part of these are caused by production and consumption of food products (Nature, 2012). Thereby, it is crucial that producers within the agricultural sector work to develop environmentally sound practices. Consumers also have a key role in the face of climate change, since their demands rule the market (Carrete, Castaño, Felix, Centeno and González, 2012). Because of this, it is highly relevant to investigate what can be done to incentivise consumers to choose green products over non-green products. Green products are those which are environmentally friendly, i.e. produced in a manner that considers animals and nature.

Previous research has been conducted on how consumers' knowledge influences their green purchasing behaviour (House, Lusk, Jaeger, Traill, Moore, Vallie, Morrow and Yee, 2004; Ramayah, Lee and Mohamad, 2010; Pieniak, Aertsens and Verbeke, 2010; Ha and Janda, 2012; Thøgersen, Haugaard and Olesen, 2010). These studies have considered different areas of knowledge, such as knowledge of products containing genetically modified organisms (GMO) and knowledge of company emissions. However, these studies have produced contradicting results. In this thesis, as a way to encapsulate a multitude of knowledge fields connected to sustainability, consumers' knowledge of ecolabels and its connection to green purchasing behaviour will be investigated.

A differentiation is made between *subjective knowledge*, what consumers believe they know, and *objective knowledge*, what consumers actually know. It has been theorized that these concepts have different implications on purchasing behaviour, making such a distinction necessary (Pieniak et al., 2010; House et al., 2004; Ellen, 1994). A measurement of *discrepancy* is also constructed, to visualize the gap between consumers' subjective and objective knowledge.

In addition to knowledge, consumers' confusion regarding ecolabels has been shown to impact green purchasing behaviour (Carrete et al., 2012; Brécard, 2014; Harbaugh, Maxwell and Roussillon, 2011). In this thesis, consumers' confusion regarding ecolabels will therefore be further investigated. In summary, this thesis will investigate young Swedish consumers' knowledge and confusion regarding food ecolabels and how these affect their green purchasing behaviour.

## 1.1 Background

In this thesis, consumption of ecolabelled food products is studied. The production of food has major positive and negative implications for the environment. Among the benefits to agriculture are for example open landscapes, preservation of certain crops, and creation of ecosystems for different species of plants and animals. But production of food also results in deforestation, over-fertilization, disruption of ecosystems and extinction of species (WWF, 2017).

Furthermore, the agricultural sector is responsible for a substantial part of the greenhouse gas emissions that have been proven to cause climate change. Out of the total greenhouse gas emissions caused by humans annually, agriculture accounts for up to one third (Nature, 2012).

The major part of the emissions from the agricultural sector, around 80 – 85%, come from the primary production, i.e. cultivation and animal farming. When forests are chopped down to create new farmland, large amounts of carbon dioxide are liberated. As the forest absorbs more carbon dioxide from the atmosphere than farmland, this further contributes to the total amount of emissions caused by agriculture. When the land has been deforested and is cultivated, nitrous oxide is liberated. Animal farming, on the other hand, causes methane gas emissions through cattle that ruminate. Methane gas is also released through stored manure and organic waste. Furthermore, the production of meat account for substantial emissions of carbon dioxide. The emissions are largely caused by the big amount of energy in the animals' feed that is lost through their metabolism. Beef is the most problematic type of meat, as 26 kilos of feed are required to produce 1 kilo of edible beef. (Dagens Nyheter, 2015)

Fossil fuel needed for the agricultural machinery also causes emissions of carbon dioxide. Transportations and packaging of the food products cause smaller amounts of greenhouse gas emissions. At the other end of the value chain, consumers stand for a substantial waste of resources. Around 30 – 40% of all food produced is thrown away, implying that a large part of the emissions caused by the agricultural sector are caused in vain. (Dagens Nyheter, 2015)

The agricultural sector accounted for 10% of the total greenhouse gas emissions within the European Union (EU) in 2012. Emissions within the EU from the agricultural sector fell by 24% between 1990 and 2012 through significant reduction in livestock keeping, more efficient use of fertilizers and better handling of manure. Agriculture in the rest of the world, however, developed in the opposite direction. Between 2001 and 2011, global emissions from agriculture increased by 14%. The increase mainly occurred in development countries due to an increase in production. This production increase, in turn, was driven by improved wages and higher living standards resulting in changed consumption patterns in these countries. Emissions of methane gas increased by 11% globally during this time period, indicating that people eat more meat when their wealth increases. (Europeiska miljöbyrå, 2015)

Despite the improvements made within the EU since the 1990's, emissions of greenhouse gases from the agricultural sector can still be reduced. Better integration of innovative technology in production is one example, as well as more efficient handling of fertilizers. The production of meat and dairy products can also become more efficient. Last but not least, there are major changes that can be done by consumers. Their choice of products to consume, and reduction of waste, largely influence the emissions caused by agriculture. (Europeiska miljöbyrå, 2015)

In this thesis, consumers' green purchasing practices of food products is studied. This particular product category is chosen for two distinct reasons. First, everyone needs food. While for example consumption of clothes can be very limited, food must be consumed on a daily basis. Second, production and consumption of food products have a large impact on the environment,

as discussed in the previous sections. This implies that people's food choices collectively have a large influence on the climate development. At the same time, some authors are cynical regarding consumers' adoption of green purchasing practices. Hummel, Levitt and Loomis (1978) wrote that *"benefits of the individual's actions are distant and seem negligible in comparison to the immediate, personal rewards [or lack thereof] the individual obtains by his behavior"* (p. 39). Acceding authors have argued that this human tendency to value short-term rewards over long-term rewards cause them to value the benefits of their existing behaviour (e.g. convenience and time savings) higher than they value the long-term, societal effects (Courtney, 1990). Thereby, there is a conflict between the urgent need to change our consumption practices and people's slow adoption of green purchasing habits.

In the light of this conflict, research regarding what makes consumers adopt green purchasing habits are of great interest. Traditionally, one way to promote adoption of green purchasing behaviour is through ecolabels, which are intended to inform consumers of products' environmental impact (Rex and Baumann, 2007). However, previous studies have shown that consumers are confused regarding the meanings of different ecolabels (Brécard, 2014). In addition, previous studies on how knowledge of ecolabels influences consumers' green purchasing behaviour have presented contradicting results (D'Souza, 2004; Leire and Thidell, 2005; Nik Abdul Rashid, 2009; Testa, Iraldo and Bartolozzi, 2013). Among the plausible explanations for why the results differed is cultural context (Ottman, 1992a, b; Peattie 1992). Therefore, it is interesting to investigate how knowledge of ecolabels influence consumers' green purchasing behaviour in Sweden, where no such study has been conducted. Gaining insight into this topic would expand the literature on knowledge of ecolabels' and its effects. In addition, it would provide product managers and storeowners with guidelines on how to promote ecolabelled products. In the long run, incentivizing consumers to choose ecolabelled products over non-ecolabelled products could help reduce the environmental impact from our daily consumption.

## **1.2 Aims**

The main aim of this thesis was to identify young Swedish consumers' knowledge about ecolabels and, by extension, how it affects their green purchasing behaviour of food products. The Swedish market was chosen since the connection between knowledge of ecolabels and purchase behaviour had not been studied in this cultural context before. Culture appears to play an important role regarding the effect of knowledge on purchasing behaviour (Ottman 1992 a,b; Peattie, 1992). This called for a study to be conducted in Sweden. Furthermore, Sweden is the number one country in the EU in terms of consumption of organic food (Swedish Institute, 2017). Thereby, the Swedish population is likely highly exposed to ecolabels, as organic food products in Sweden are required to carry a minimum of one ecolabel, called the Euro Leaf (European Commission, 2017). This indicates that Swedish consumers have formed attitudes on this matter, based on lived and/or mediated experience (Elliott and Wattanasuwan, 1998), which made Sweden an attractive market to study consumers' knowledge of ecolabels.

The second aim of this thesis was to identify if low levels of knowledge about ecolabels is correlated with consumer confusion regarding ecolabels. Consumer confusion about the meanings of different ecolabels has been shown to be caused by profusion of ecolabels (Ben Youssef and Abderrazak, 2009; Brécard, 2014; Comas Marti and Serifert, 2012; Harbaugh et al., 2011). In addition to profusion, the authors of this thesis believe that low levels of knowledge regarding ecolabels could also be a potential cause for confusion.

The third and final aim of this thesis was to identify whether confusion is a cause for why products bearing ecolabels are not bought. If this is the case, then consumer confusion is problematic in the light of climate change. However, consumer confusion negatively influencing consumers' green purchasing behaviour would also have important implications. This would suggest that reducing their confusion would lead to an increased amount of green purchases.

### **1.3 Research Purpose**

The purpose of this research was to uncover young Swedish consumers' knowledge and confusion regarding food ecolabels, and by extension, how these affect their purchasing behaviour. Gaining understanding regarding these matters would provide insights into how consumers' green purchasing behaviour can be facilitated, which ought to be of great interest for both ecolabel managers and product managers. Furthermore, the connection between knowledge and confusion regarding ecolabels and how these affects purchasing behaviour has not been studied in the Swedish market before, and thereby this thesis provides a theoretical contribution to the research fields of knowledge and consumer behaviour. This topic is especially relevant considering the issue of climate change, from both a practical and theoretical point of view.

### **1.4 Research Limitations**

In this thesis, only a few ecolabels among the most frequently occurring ones in the food product category were investigated. The reason for this was the scope and timeframe for this thesis. Furthermore, this study was conducted on young consumers in the age bracket of 18 – 35. The reason for this was because young consumer's consumption practices will influence the environment for a long time period henceforth. They will exert their influence primarily as consumers, but also as tomorrow's decision makers. Furthermore, these consumers will raise the next generation, and it is interesting to investigate which consumption habits they will pass on to their children. Thereby, the investigation was limited to only a part of the current consumer population, in order to achieve a long-term perspective on green consumption.

The authors of this thesis argue that culture is an important factor that could explain why previous studies on ecolabels (D'Souza, Taghian, and Lamb, 2006; Sammer and Wüstenhagen, 2006; Nik Abdul Rashid, 2009) have presented different results. Thereby, comparisons to other Swedish studies would have been desirable. However, there is a lack of studies on Swedish consumers' knowledge about ecolabels, which hinders relevant comparisons to be made. This

is considered a limitation, as the lack of relevant comparisons reduces the validity of the study and to some extent prevents the construction of generalizable conclusions.

In this thesis, three quantitative surveys were conducted. Since the target group was young Swedish consumers, the surveys were written in Swedish to incentivize as many people as possible to participate. This implies that the survey questions, and by extension, the measured variables, were translated from Swedish to English. Thus, a possible limitation is that the meaning of particular questions could be lost in translation. However, the translation was made with great care, to minimize this risk.

## 1.5 Outline of Thesis

Below, the disposition of the thesis is visualized in Figure 1.

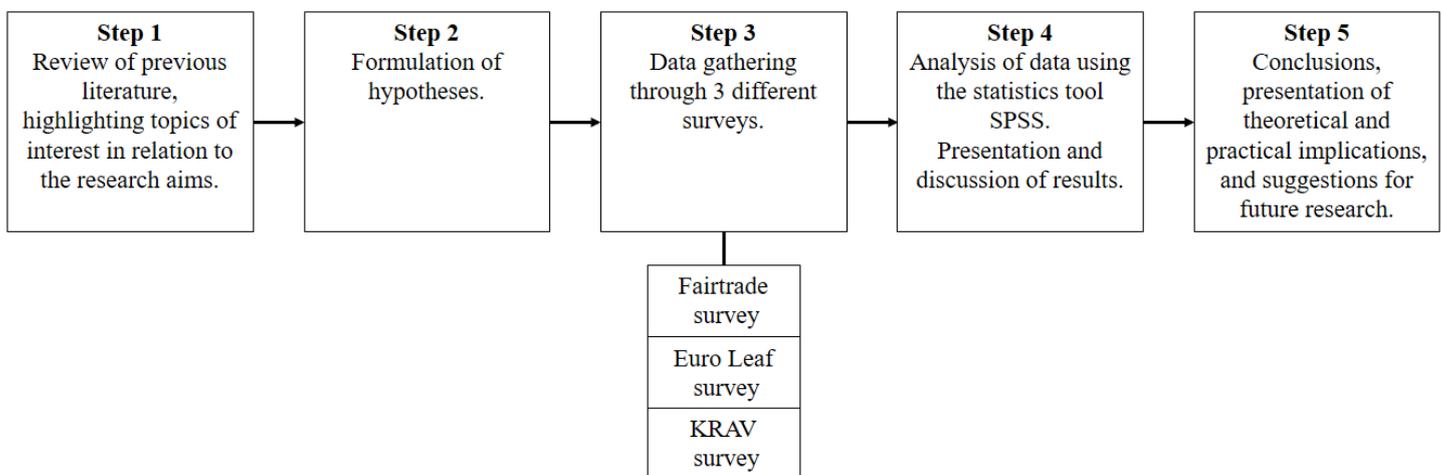


Figure 1. Visualization of thesis disposition.

## 2 Literature Review

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*In this section, previous literature relevant to the research aims is presented. The information has been gathered through a thorough and critical review of appropriate sources. First, the purpose of ecolabels is addressed and previous studies regarding effects of ecolabels on consumer purchase behaviour are discussed. Second, the concepts of objective knowledge and subjective knowledge are described in depth. Third, consumer confusion regarding ecolabels is discussed.*

### 2.1 Ecolabels and Green Purchasing

#### 2.1.1 The Purpose of Ecolabels

The first ecolabeling schemes were developed in the late 1970's in Germany (Rahbar and Abdul Wahid, 2011). In recent years, ecolabels have increasingly been utilized by marketers to promote the identification of green products (D'Souza et al., 2006). Ecolabels are thus used as

an instrument for consumers to access information regarding how the product was made, i.e. in an environmentally friendly manner (Rahbar and Abdul Wahid, 2011; Rex and Baumann, 2007). Thereby, the decision-making process regarding the purchase of the product is facilitated. Sammer and Wüstenhagen (2006), in turn, identified ecolabels as an important signalling tool to address information asymmetry between sellers and buyers. According to Sammer and Wüstenhagen (2006), ecolabels accomplish two main functions for consumers. First, ecolabels provide information that informs the consumers about the product and its intangible characteristics, such as product quality. Second, ecolabels have a value function, e.g. they bring prestige to the consumer buying the product.

The American Marketing Association (2017) defines a brand as a "*Name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers.*" This definition can be generalized to an eco-brand, and by extension, its associated ecolabel. In this thesis, an eco-brand is therefore defined as the *name, term, symbol or design of a product that is environmentally friendly*. These terms indicate that the utilization of ecolabels can assist consumers in differentiating green products from other, non-green products, in line with Rahbar and Abdul Wahid's (2011) and Rex and Baumann's (2007) explanations of the purpose of ecolabels.

### **2.1.2 Effects of Ecolabels on Consumer Purchase Behaviour**

According to Rahbar and Abdul Wahid (2011), the purpose of green marketing tools, such as ecolabels, is to spread awareness of green products and their attributes and characteristics among consumers. By providing this information, marketers aim to guide consumers' purchasing behaviour towards green products (Rahbar and Abdul Wahid, 2011). Consequently, many studies have been conducted on how ecolabels affect consumers' green purchasing behaviour (D'Souza et al., 2006; Sammer and Wüstenhagen, 2006; Nik Abdul Rashid, 2009). The different studies have shown different, and sometimes contradicting, results. D'Souza (2004) wrote that little is understood about the effects of ecolabels on consumer's intentions to purchase environmentally friendly products. Leire and Thidell's (2005) study indicated that although the functions of ecolabels are recognized by consumers, this does not necessarily translate into a green purchasing behaviour. Contradictory, Nik Abdul Rashid's (2009) study showed that awareness of ecolabels has positive effects on consumers' green purchase intentions. Similarly, Testa et al. (2013) showed that consumers with greater knowledge of ecolabels are more likely to buy green products.

The dissimilar results from these different studies may be caused by several factors. First, the approaches and methods adopted by the different researchers might have influenced the results. For example, D'Souza et al. (2006) focused on how consumers who differ in environmental concerns respond to ecolabels, while Rahbar and Abdul Wahid (2011) looked at how consumers' trust in ecolabels influence their purchasing behaviour. Sammer and Wüstenhagen (2006) compared the importance of a product's ecolabel to other product features, such as brand name, in consumers' purchasing decisions. Nik Abdul Rashid (2009) studied how an introduction of an ecolabel, in a market inexperienced with environmental initiatives

(Malaysia), influences consumers' purchasing decisions. Leire and Thidell (2005) looked at how consumers' understanding of the information provided through ecolabels affect their purchasing decision. Thus, these studies focused on different variables influencing consumers' purchasing behaviour, which could explain why the studies' showed contradicting results.

Furthermore, the different researchers adopted different methods to investigate their respective topics. Among the mentioned authors, a wide range of methods are present. D'Souza et al. (2006) used a model-building approach based on previous research, while Leire and Thidell (2005) compiled a large body of previous literature. Rahbar and Abdul Wahid (2011), Sammer and Wüstenhagen (2006) and Nik Abdul Rashid (2009) all conducted quantitative surveys, but in different environments and with different number of respondents. These varied methods could also have affected the different results among the studies. In this thesis, a quantitative method was adopted, in line with Abdul Wahid (2011), Sammer and Wüstenhagen (2006) and Nik Abdul Rashid (2009).

Second, it is possible that the nature of the respective markets caused the different results. This explanation is supported by a report by the British Parliamentary Office of Science and Technology (2004), which stated that in markets with low awareness about environmental issues, ecolabeling as a green marketing tool is ineffective. Consumers who worry about the environment and have high awareness about environmental issues, on the other hand, have been shown to engage in different green behaviours such as examining products before the purchase, to ensure they are buying ethically (Suchard and Polonski, 1991). In Sweden, where this study was conducted, climate change was the most important question for voters the European Parliament election and the fifth most important question in the general election in 2014 (Statistiska Centralbyrån, 2014). Thereby, the awareness about environmental issues is assumed to be rather high in the Swedish market.

Third, a varied degree of trust among consumers towards ecolabels in different markets might have caused the different results in the aforementioned studies. According to Chan (2004), the main reasons for low perceived credibility of environmental claims in advertisements are vague arguments, that the source country or manufacturer of the advertised product does not bear an eco-friendly image, or if the supposed eco-friendliness of the advertised product does not match with the respondent's previous consumption experience. However, in the Swedish market, consumers generally have a positive attitude towards ecolabels according to the Stockholm Consumer Cooperative Society (Riksdagen, 2015). Even if they do not understand the differences between different ecolabels, the presence of an ecolabel indicates that an effort has been made as compared to other, non-ecolabelled products. This is viewed favourably by consumers (Riksdagen, 2015).

Fourth, cultural differences might have caused the different results. Most studies on the influence of green marketing tools on purchase behaviour have been conducted in industrialized countries (Bleda and Valente, 2008; Chatterjee, 2009; Chan, 2004; Davis, 1993). Therefore, there ought to be some similarities between the consumers in these studies. However, the varied results suggest that the findings may only be relevant in certain cultural, time and geographical

contexts (Rahbar and Abdul Wahid, 2011). This is supported by Ottman (1992a, b) and Peattie (1992), who suggest that demand for and attitudes towards green products is likely to be uneven across different cultures. This suggests that consumers' thoughts on ecolabels, their value and the message they convey, are perceived differently depending on the cultural context. This, in turn, suggests that findings from comparable studies abroad might not be generalizable to the Swedish market. Thereby, it is legitimized to investigate how ecolabels are perceived among Swedish consumers.

Looking at previous studies, there appears to be a great deal of confusion and disagreement regarding ecolabels' effect on consumers' purchasing behaviour. The authors of this thesis argue that the dissimilar results originating from previous studies depend on several factors. The mentioned studies adopted different methods, targeted consumers with different levels of awareness of environmental issues and varying degrees of trust towards ecolabels, and the studies were conducted in different cultural contexts. In this thesis, the most common method, a quantitative approach, was adopted, and the study was conducted in a cultural context where people are aware of environmental issues and have a high degree of trust towards ecolabels.

### 2.1.3 Knowledge and Green Purchasing Behaviour

The connection between different types of knowledge and consumers' green purchasing behaviour is a well-researched area. In Table 1, some of the most prominent studies and their areas of knowledge are compiled.

<b>Knowledge Research Area</b>	<b>Researcher(s)</b>
Influence of knowledge about <i>organic foods</i> on purchasing behaviour	Pieniak et al. (2010) Aertsens, Mondelaers, and Van Huylenbroeck (2009)
Influence of knowledge about <i>sustainable fishery</i> on purchasing behaviour	Thøgersen et al. (2010)
Influence of knowledge about <i>companies' environmental activities</i> on purchasing behaviour	Ellen (1994)
Influence of knowledge about <i>genetically modified food</i> on purchasing behaviour	House et al. (2004)
Influence of knowledge about <i>production of food in general</i> on purchasing behaviour	Gaskell, Bauer, Duran, and Allum (1999)
Influence of knowledge and awareness about <i>environmental change in general</i> on purchasing behaviour	Paco, Raposo and Filho (2009) Ramayah et al. (2010) Aman, Harun and Hussein (2012)
Influence of knowledge about <i>products' environmental impact</i> on purchasing behaviour	D'Souza et al. (2007) Moisander (2007) Ha and Janda (2012)

**Table 1.** Previous studies' different measurements of knowledge

The studies listed in Table 1 have investigated different areas of knowledge connected to sustainability. However, few studies have investigated how knowledge of *ecolabels* affects purchasing behaviour (Testa et al., 2013). Therefore, this study aims to research consumers' knowledge of ecolabels and whether it is correlated to their purchasing behaviour. Studying knowledge of ecolabels encapsulates several of the aforementioned studies' research areas. Knowledge of *organic foods, sustainable fishery, companies' environmental activities, gene modified food, production of food in general* and *products' environmental impact* are to a great extent covered in the standards put forward by the companies behind the ecolabels. Thus, knowledge of ecolabels may function as an umbrella term that encapsulates the other areas of knowledge. This in turn suggests that studying consumer knowledge about ecolabels allows an overarching grasp to be taken on knowledge's effect on green purchasing behaviour.

Other factors than knowledge have been highlighted in other studies as important influencers on green purchasing behaviour. These studies suggest that *price* (Botonaki, Polymeros, Tsakiridou and Mattas, 2006), *availability* (Rodríguez, Lacaze and Lupín, 2008), *lack of trust* (Krystallis, Vassallo, Chryssohoidis and Perrea, 2008) and *uncertainty* (Thøgersen, 2007) are the main influencers of green purchasing behaviour. Worth noting is that all the aforementioned authors agree to green purchasing behaviour being influenced by a multitude of factors. However, there seems to be a disagreement as to which factor is the main influencer and whether knowledge is an influencer. The studies' different, and sometimes contradicting, results indicate that the impact of knowledge on green purchasing behaviour is unclear. Therefore, this study aims to shed light on the influence of knowledge about ecolabels on green purchasing behaviour. Gaining insight into this relationship would help clarifying the role of knowledge and could thereby aid future research regarding motivations for green purchasing behaviour.

## **2.2 Consumer' Subjective and Objective Knowledge**

### **2.2.1 Definition of Subjective and Objective Knowledge**

Park and Lessig (1981), two influential researchers in the academic research field of knowledge, argued for two approaches to product familiarity. The first approach measures how much an individual *knows* about a product and the second measures how much a person *thinks s/he know* about a product. Although not mentioned by these terms in their study, the two approaches to product familiarity is commonly referred to as objective and subjective knowledge by other researchers (Ellen, 1994; Alba and Hutchinson, 2000; Flynn and Goldsmith, 1999; Taylor and Brown, 1988). Later on, Brucks (1985) described product familiarity in three categories: *objective knowledge, subjective knowledge, and prior knowledge*. Brucks' (1985) additional term *prior knowledge* is of relevance as other researchers found that subjective knowledge is influenced by prior knowledge (Tormala and Petty, 2007). Since this study aims to measure knowledge regarding ecolabels, and ecolabels are often bundled together or encountered en masse (Ben Youssef and Abderrazak, 2009), prior knowledge is an important element to consider. Consistent with previous studies, this thesis will adopt Brucks' (1985) definition, as opposed to Park and Lessig's (1981) definition. Brucks' (1985) definition states that objective

knowledge is a measure of how much an individual actually knows, while subjective knowledge is the individual's perception of how much s/he knows, and prior knowledge is the individual's familiarity and product experience.

With the definitions of subjective and objective knowledge in mind, the previous discussion regarding the role of knowledge in general on consumers' purchasing behaviour becomes more nuanced. Other researchers have found that subjective and objective knowledge have different effects on purchasing behaviour. Pieniak et al. (2010) found that subjective knowledge of organic foods was positively correlated to green purchasing behaviour while objective knowledge was not. Since the research field of knowledge of ecolabels in the Swedish market is lacking, it is relevant to study whether the results of Pieniak et al. (2010) are applicable to knowledge of ecolabels as well. In order to investigate if this is the case, the following hypotheses were formulated:

**H1a: Subjective knowledge is positively correlated to green purchasing behaviour.**

**H1b: Objective knowledge is positively correlated to green purchasing behaviour.**

### **2.2.2 Information Acquisition and Subjective Knowledge**

Jacoby (1974), argued that subjective knowledge, as the term suggests, is subjective and not dependent on the information provided, but rather on how the information is perceived and affects the receiver. Jin and Han's (2014) conducted a study on college students that showed that more prior knowledge increased subjective knowledge regarding food products. In other words, students who had more prior knowledge of food products perceived themselves as more knowledgeable than those with less prior knowledge. Contrary, Vigar-Ellis (2015) showed that consumer with more prior knowledge of certain types of wine, had less subjective knowledge of other wines.

As this thesis investigated ecolabels found on food products, the following hypothesis was formulated in line with Jin and Han (2014), to investigate if more prior knowledge increased subjective knowledge regarding ecolabels:

**H2a: Consumers who have actively searched for information regarding an ecolabel have a higher level of subjective knowledge regarding ecolabels, than consumers who have not actively searched for information.**

For the purpose of comparing subjective knowledge with objective knowledge, the following hypothesis was also formulated:

**H2b: Consumers who have actively searched for information regarding an ecolabel have a higher level of objective knowledge regarding ecolabels, than consumers who have not actively searched for information.**

### **2.2.3 Lack of ‘hard’ Meanings Increases Subjective Knowledge**

Previous research has highlighted the lack of ‘hard’ meaning to phrases commonly used to communicate environmental benefits (Mayer, Scammon, and Zick, 1992). Terms such as ‘*recyclable*’, ‘*degradable*’ and ‘*environmentally friendly*’ have different meanings for different consumers and are applied to a multitude of situations. The different meanings and interchangeable usage of similar terms makes it difficult for companies to provide consumers with appropriate information.

Information regarding ecolabels often include such terms. Thereby, the lack of ‘hard’ meanings increases consumers’ subjective knowledge (Mayer, Scammon and Zick, 1992) as they construct their own opinions of what the ecolabels stand for based on these loose terms, rather than by acquiring objective information. This indicates that the lack of ‘hard’ meanings could lead to an increase in the discrepancy between consumers’ subjective and objective knowledge about a particular ecolabel. This, in turn, indicates that the information provided by an ecolabel is not sufficient to educate the consumer on its environmental benefits. Contrary, the information serves as a catalyst to the consumers’ subjective knowledge providing him/her with a false sense of awareness. This is the opposite of the desired result of the ecolabelling companies’ attempt to educate consumers. Although the lack of ‘hard’ meanings is not measured in this study, this discussion provides a potential explanation to where consumers’ subjective knowledge originates from.

### **2.2.4 Knowledge and Self-perception**

Taylor and Brown (1988) stated that certain people, despite having the requisite knowledge to make well-informed decisions, may perceive themselves as less knowledgeable than they actually are. This uncertainty may be used as an excuse not to purchase green products and foist environmental responsibility onto others (Taylor and Brown, 1988). Contradictory, Taylor and Brown (1988), also stated that humans in general tend to evaluate themselves as being better than others, i.e. know more than others. Regarding ecolabels, this implies that consumers often think they know what a particular ecolabel stands for, when in reality their knowledge is merely constructed. Taylor and Brown (1988) also stated that consumers who overestimate their own knowledge are unlikely to acquire correct information. Thereby, their incorrect knowledge is retained. This indicates that consumers who have incorrect information regarding an ecolabel are unlikely to acquire correct information, and thereby there is a discrepancy between their subjective knowledge and objective knowledge. In the light of this discussion, the following hypothesis is formulated:

**H3a: Consumers have a discrepancy between their subjective and objective knowledge.**

To further investigate the implications of a potential knowledge discrepancy, it was explored whether consumers who overestimate their knowledge buy more green products compared to those who underestimate it. Although not rooted in any particular previous research, studying

this relationship seemed like a natural course of action. Thereby, the following hypothesis was formulated:

**H3b: Consumers with different levels of discrepancy purchase different amounts of green products.**

## 2.3 Consumer Confusion Regarding Ecolabels

Defining *consumer confusion* is problematic as it is a subjective term that has different meaning to different individuals. Cambridge Dictionary (2017) defines confusion as: ‘*a situation in which people do not understand what is happening, what they should do or who someone or something is*’. This definition illustrates confusion as a perceived feeling in an individual’s mind, not a quantifiable measurement. In accordance with this definition, in this thesis, consumers were asked to assess their confusion regarding ecolabels themselves. In addition, the authors of this thesis aimed to assess whether low objective knowledge about ecolabels is a predictor of confusion regarding the meanings of ecolabels. These results may be compared with the results of Gracia and de Magistris (2008), who detected low knowledge and high confusion regarding the meaning of ecolabels as major barriers for purchasing of ecolabelled food. The following hypothesis was formulated:

**H4: Consumers with a low level of objective knowledge regarding ecolabels are more confused than consumers with a high level of objective knowledge regarding ecolabels.**

Comas Marti and Serifert (2012) showed that 92% of one thousand managers and sustainability practitioners’ view consumer confusion to be a medium to extreme challenge. Consumer confusion is thereby an important topic and a troublesome issue for market practitioners in the field of green marketing (Comas Marti and Serifert, 2012). In line with these findings, other studies have shown that consumers frequently struggle to differentiate between organic and conventional food and that there is a general confusion regarding ecolabelled products (Chryssochoidis, 2000; Brécard, 2014). Ben Youssef and Abderrazak (2009) argued that the coexistence of different ecolabels in the market create confusion and asymmetric information as consumers are not able to distinguish between the different ecolabels and what they stand for. Harbaugh et al. (2011) had a similar line of thinking. They identified ecolabel profusion as preventing consumers from distinguishing different ecolabels from each other and make sense of them. Brécard (2014) further stated that consumers faced with deciding between purchasing two different ecolabelled products perceive them as two versions of an “*environmentally friendly good*”, meaning that they are unable to distinguish their differences.

Consumers’ inability to distinguish different ecolabels from one another is troublesome as one of the intended purposes of ecolabels is to enable consumers to distinguish green products from both other, non-green products as well as from each other (Rahbar and Abdul Wahid, 2011; D’Souza et al., 2006; Sammer and Wüstenhagen, 2006). The same authors argue that lack of distinguishability leads to fewer green purchases. In this thesis, the relationship between confusion and green purchasing behaviour was tested through the following hypothesis:

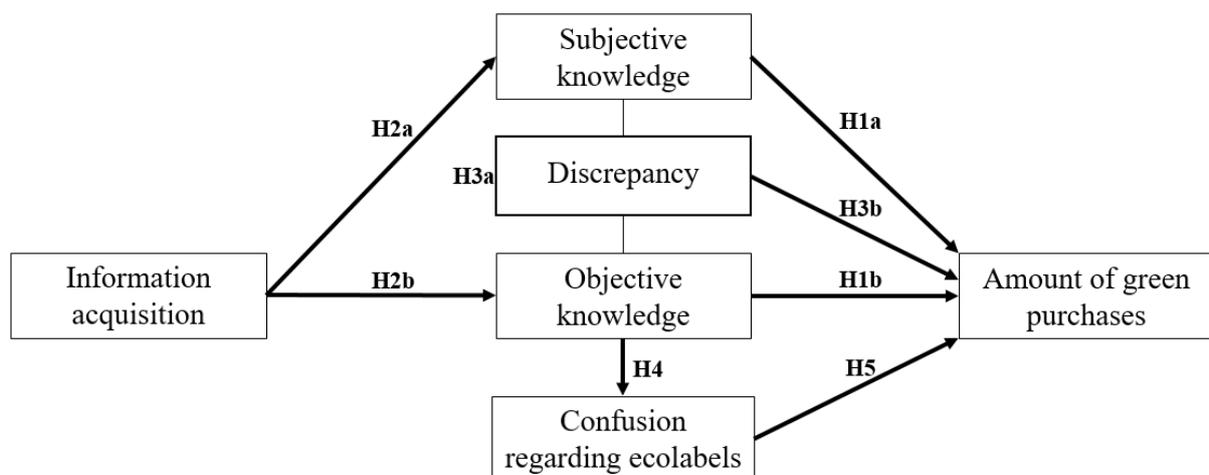
**H5: Confusion regarding ecolabels is negatively correlated with amount of green purchases.**

## 2.4 Summary of Hypotheses

The different hypotheses derived from the literature review are compiled in Table 2 below. How they are related to each other is further visualized in Figure 2.

Hypothesis
<b>H1a:</b> Subjective knowledge is positively correlated to green purchasing behaviour.
<b>H1b:</b> Objective knowledge is positively correlated to green purchasing behaviour.
<b>H2a:</b> Consumers who have actively searched for information regarding an ecolabel have a higher level of subjective knowledge regarding ecolabels, than consumers who have not actively searched for information.
<b>H2b:</b> Consumers who have actively searched for information regarding an ecolabel have a higher level of objective knowledge regarding ecolabels, than consumers who have not actively searched for information.
<b>H3a:</b> Consumers have a discrepancy between their subjective and objective knowledge.
<b>H3b:</b> Consumers with different levels of discrepancy purchase different amounts of green products.
<b>H4:</b> Consumers with a low level of objective knowledge regarding ecolabels are more confused than consumers with a high level of objective knowledge regarding ecolabels.
<b>H5:</b> Perceived confusion regarding ecolabels is negatively correlated with amount of green purchases.

**Table 2.** Summary of hypotheses



**Figure 2.** Visualization of formulated hypotheses. *Information acquisition* refers to consumers searching for information regarding ecolabels, as stated in H2.

## 3 Studied Ecolabels

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*In this section, the three ecolabels Fairtrade, the Euro Leaf and KRAV are presented. These ecolabels were used in a quantitative study conducted to investigate young Swedish consumers' knowledge and confusion regarding ecolabels.*

All companies operating in the Swedish market are obliged to follow national laws, as well as adopted international legislations. Examples of such laws include for example livestock keeping regulations and environmental protection legislations. Thereby, a certain minimum level of ethical consideration is ensured for all food products sold in Sweden, independent of them being additionally ecolabel certified. However, to be able to market a product as 'ecological', the qualifications regulated in the EU legislations (EC) 834/2007, (EC) 889/2008 and (EC) 1235/2008, and changes of these, must be fulfilled (KRAV, 2017). These legislations also form the foundation for the Euro Leaf ecolabel, which implies that a product marketed as 'ecological' must feature the Euro Leaf.

In this thesis, three ecolabels have been chosen to be used in a quantitative study investigating consumer knowledge and confusion. These are the Fairtrade label, the KRAV label and the Euro Leaf label. These labels were chosen due to their frequent occurrence in Swedish grocery stores (Miljömarkningar.se, 2017). By including commonly occurring ecolabels, the respondents to the study were more likely to have formed attitudes and thoughts regarding these. This increased the likelihood of receiving relevant data. Another reason for choosing said ecolabels was to ensure that the study covered a span of ecolabels on domestic, European and global level. KRAV is a Swedish ecolabel that is almost exclusively found in the Swedish market (KRAV, 2017), the Euro Leaf is an ecolabel provided by the EU and is found throughout the European countries (European Commission, 2017) and Fairtrade is a global ecolabel that is found in markets all over the world (Fairtrade International, a, 2017). Including ecolabels found in domestic, international and global markets provided the study with nuanced data.

In the following sections, the characteristics and requirements of the respective ecolabels are described. The descriptions do not aim to be exhaustive, but rather to provide comprehensive summaries of the chosen organizations and their associated ecolabels.

### 3.1 Fairtrade



Fairtrade International is an international organisation founded in 1997. The organisation works to promote producers' rights by enabling partnerships between producers and consumers. For

a product or brand to be Fairtrade certified, a set of standards needs to be met. The standards differ for each type of product, but the following common principles (Fairtrade International, a, 2017) are considered by all Fairtrade certified producers and organizations:

**1) Social development:** All workers must have access to democratic decision-making processes and as far as possible partake in the activities of the organization. In hired labour situations, the standards require the organization to provide social rights and security.

**2) Economic development:** Buyers are required to pay a 'Fairtrade Minimum Price' on all Fairtrade products. In addition, they are sometimes required to pay a 'Fairtrade Premium Price' on the products. The former aims to help producers cover the costs of sustainable production, while the latter goes to a communal fund and is used to improve the farmers' social, economic and environmental conditions. Fairtrade standards also require buyers to give a financial advance on contracts if producers ask for it. This practice promotes entrepreneurship and can assist economic development.

**3) Environmental development:** Fairtrade standards include regulations for environmentally sound agricultural practices. The focus areas are minimized use of agrochemicals, proper management of waste, maintenance of soil fertility and water resources, and prohibition of genetically modified organisms. Fairtrade standards do not require organic certification as part of its requirements. However, organic production is promoted and rewarded through higher 'Fairtrade Minimum Prices' for organically grown products.

**4) Forced labour and child labour:** Forced labour and child labour are prohibited.

The Fairtrade label can be found on a wide range of products. For single ingredient products carrying the Fairtrade label, 100% of the product meets the Fairtrade standards. For composite products carrying the Fairtrade label, all ingredients that can be sourced as Fairtrade must be Fairtrade. The percentage of each Fairtrade ingredient must be displayed on the back of the pack, and at least 20% of the total content must be Fairtrade certified (Fairtrade International, b, 2017).

## 3.2 The Euro Leaf



The Euro Leaf is an ecolabel provided by the EU. The logo implies that at least 95% of the agricultural ingredients in the product are organic. A product that can be legally qualified as organic is in full conformity with the conditions and regulations for organic farming established by the EU. There are several EU legislations related to organic farming. The Council Regulation (EC) No. 834/2007 define the principles, aims and overarching rules of organic production and

how organic products should be labelled. The Regulation (EEC) No. 2092/91 establishes the legal framework for all levels of production, distribution, control and labelling of organic products which can be traded in the EU. Moreover, the Commission Regulation (EC) No. 889/2008 provides rules on plant production, animal protection, labelling and control. This regulation, together with the Commission Regulation (EU) No 271/2010, also includes rules on production, processing, packaging, transport and storage of products. The Commission Regulation (EC) No. 1235/2008 provides rules concerning import of organic products from third countries (European Commission, 2017).

Together, the legislations cover a broad scope of organic farming (Eur-Lex, 2017). The following areas are of distinct importance and ought to be highlighted:

- **Plant production:** Regulations regarding soil management and fertilization, and prohibition of certain pesticides.
- **Livestock production, housing and husbandry practices:** Regulations regarding access to open air areas for organic livestock, feed, and stocking density.
- **Disease prevention and veterinary treatments**
- **Processing of products:** Regulating the usage of certain products, substances and non-organic ingredients in processing of food.
- **Conversion rules:** For plants, livestock and land associated with organic production.
- **Management of seed database**
- **Labelling practices**

From 1 July 2010, the use of the Euro Leaf is compulsory for organic pre-packaged food produced within the union. In addition, it is also possible to use it on a voluntary basis for non-pre-packaged organic food produced within the union, or any organic food imported from third countries. The Euro Leaf cannot be used for products that are outside the scope of the EU organic legislation. (Euro Leaf, 2017)

### 3.3 KRAV



KRAV is a Swedish organisation founded in 1985 focused on ecological farming, with particularly high standards regarding environmental impact, livestock keeping, and use of agrochemicals in production and food preparation. KRAV is a patent protected label, and only companies which fulfil an extensive set of regulations and additionally pays a license fee can use the KRAV label on their products. Products that are certified by KRAV are controlled at least once per year to ensure that they still fulfil the standards. (KRAV, 2017)

The standards include regulations regarding general operations, comprising rules regarding social responsibility, environmental protection, cultural protection, energy usage, and permitted substances and materials in production and packaging. Furthermore, there are detailed rules regarding crop production, production of fodder, livestock keeping, beekeeping, fishing, water protection, slaughter, product refinement, and usage of certain devices in production. (KRAV, 2017)

KRAV's overall goal is to promote sustainable practices in all stages of production and distribution. Thereby, the KRAV certification not only includes regulations regarding environmental concerns, but also criteria connected to social issues and economic stability. (KRAV, 2017)

KRAV's regulations are largely adapted to other regulations for ecological production that exist within Europe or globally. KRAV fulfil the criteria posed by the international joint committee IFOAM regarding ecological production, as well as the criteria for ecological production posed by the EU. This implies that a KRAV certified product fulfils all requirements for the Euro Leaf label. In some regards, KRAV also has stricter regulations than those posed by other organizations. For example, KRAV has regulations regarding slaughter and fishing, which are two areas that are not covered by the EU ordinances (KRAV, 2017). Because of this, the KRAV label is not always featured together with the Euro Leaf, even though this is the case most of the time.

## **4 Methodology**

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*In this section, the methodology adopted in the thesis is presented.*

### **4.1 Research Approach**

A deductive research approach was concluded to best achieve the aims of this thesis and was therefore adopted. Deductive reasoning begins with the formulation of a theory, which is narrowed down by observations and finally confirmed or discarded (Bryman and Bell, 2015). In this thesis, hypotheses were formulated based on previous theory and later confirmed or discarded through a quantitative study with three different surveys. Thereby, a positivist stance was taken.

### **4.2 Research Design**

In this thesis, a cross sectional design was used, where data was gathered without the purpose of charting changes over time (Burns and Burns, 2008). Thus, how consumers' knowledge and confusion regarding ecolabels change over time was not investigated. Instead, the aim was to identify what they currently look like by gathering data over a short time period.

### 4.3 Data Collection Method

The quantitative study was conducted by designing and providing three different surveys to consumers visiting ICA stores in Lund, Stockholm and Uppsala. ICA stores were chosen as the ICA cooperation controls roughly half of the Swedish market (Konkurrensverket, 2016) and has both big and small grocery stores that attract a wide range of consumers. Students on Lund University campus were also asked to participate in the study, after having ensured that they regularly shop in grocery stores. The objective was to exclude individuals from the sample who never personally purchase ecolabelled products. People who has a family member who shops for them, or who eats all meals out, would have tainted the study with irrelevant answers as they never decide between ecolabelled products and other products.

In order to cover a span of different ecolabels and to increase the likelihood of finding generalizable results, three ecolabels were studied. Thereby, three different surveys were constructed, each with its own set of questions regarding Fairtrade, the Euro Leaf and KRAV, respectively. However, a large proportion of the questions were the same across all surveys. This was due to the intention of measuring general consumer characteristics such as *general subjective knowledge*, *confusion regarding ecolabels* and *amount of green purchases*. For these measurements, the answers from all respondent groups were compiled. Contrary, *specific subjective knowledge* is an example of a variable which is tied to specific ecolabels, making it necessary to measure it individually for each label. Therefore, such specific questions were customized for each survey to fit each ecolabel. The surveys can be viewed in their entirety in 8.2 Appendix.

The three surveys were Internet-based to save time and improve accuracy. Internet-based surveys are also more environmentally friendly than traditional paper based surveys, which is in line with the topic of this thesis. The respondents were given a link to one of the three surveys and answered the questions on their smartphones. Those who did not own a smartphone were offered the possibility to answer on a portable computer provided by the authors of this thesis. The surveys took roughly ten minutes to complete. As there were three different surveys, there were also three different links. The links were handled out alternately, to ensure a representative mix of respondents in each group, as well as roughly equal number of respondents to each survey.

In total, 490 people were approached during two weeks in May 2017. Out of these, 347 respondents participated in the study, yielding a response rate of 71%. Out of the 347 respondents, 27 people dropped out from the survey before responding to all questions. These were therefore dropped from the sample, implying that 320 usable answers were left.

109 of the answers belonged to the Fairtrade survey, while 106 belonged to the Euro Leaf survey, and 105 to the KRAV survey. All 320 answers were reviewed to ensure that the respondents had fairly varied answers, indicating that they had read the questions and responded to them in a serious manner. All 320 answers were deemed to be serious and were therefore kept in the data. One respondent skipped all questions regarding green purchasing behaviour,

but otherwise responded to all questions. This respondent was therefore excluded from all tests where the variable *Amount of green purchases* was used.

## 4.4 Measuring Variables

The variables used in this study were based on the different questions posed in the three surveys. Since the variables originate from questions and statements, it is necessary to explain how they were interpreted and calculated. The variables of interest are *subjective knowledge*, *objective knowledge*, *discrepancy*, *confusion*, *information acquisition* and *amount of green purchases*. Below follows the procedure of how each variable was measured and interpreted.

### 4.4.1 Measuring Knowledge

Through the surveys, subjective and objective knowledge of ecolabels among consumers was investigated. Thereby, the authors of this thesis had to determine how to measure each type of knowledge. There are several different procedures one can adopt while measuring subjective and objective knowledge and each method has benefits and shortcomings (House et al., 2004; Flynn and Goldsmith, 1999; Vigar-Ellis, Pitt and Caruana, 2015; Hunt, 2003).

House et al. (2004) argued that a beneficial way to measure both subjective and objective knowledge is to first let respondents assess their general knowledge in a field, followed by a test with questions connected to the same field. In their study of consumers' knowledge of genetic modified foods, the respondents were asked to answer the following question: '*How knowledgeable would you say you are about the facts and issues concerning genetic modification in food production?*'. The possible answers ranged from 1 (*not at all knowledgeable*) to 9 (*extremely knowledgeable*). This question was followed by statements concerning GMO where the respondents could answer *true* or *false*. The first question provides the researcher with the respondents' perceived knowledge, i.e. their subjective knowledge. The number of correct answers on the statements provide the researcher with the respondents' objective knowledge. House et al., (2004) argued that this approach maintains simplicity despite the complexity of measuring knowledge.

The well-cited authors Flynn and Goldsmith (1999), on the other hand, adopted a different procedure to measure subjective knowledge. They argued that in order to receive an accurate measurement of subjective knowledge, more than one question is required. They recommended providing the respondents with nine statements such as '*I know pretty much about fashion clothing*', where the answers ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). This would provide researchers with better data compared to when only one statement is used.

In order to maintain academic consistency with regards to previous studies conducted on topics connected to sustainability and knowledge, the method advocated by House et al., (2004) was adopted. Although Flynn and Goldsmith's (1999) procedure might arguably provide a more accurate measurement of subjective knowledge, their study did not include a measurement of objective knowledge. In order for the authors of this thesis to compare the respondents'

objective and subjective knowledge, in a way that is academically correct, it was concluded that adopting the method of House et al. (2004) was more favourable. Adopting a measure of subjective knowledge measurement from one previous study while adopting objective knowledge measurement from a different study could provide inaccurate results.

In line with House et al. (2004), the respondents were therefore asked '*How knowledgeable would you say you are about the facts and issues concerning ecolabels?*' to measure subjective knowledge. The possible answers ranged from 1 (*not at all knowledgeable*) to 7 (*extremely knowledgeable*). A traditional Likert scale typically contains five response categories (Malhotra, 2010), while House et al (2004) used a 9 point scale. Therefore, the middle option of a 7 point scale was chosen. This number of response categories was determined to provide nuanced answers, while still being simple. Objective knowledge, on the other hand, was measured as number of correct answers on nine true/false statements concerning each ecolabel. The respondents were encouraged to skip statements that they did not know the answer to, in order to reduce the risk of them guessing and attaining correct answers despite lacking knowledge. The statements are compiled in 8.1 Appendix.

In some statistical tests performed in this thesis, the objective knowledge scores for all labels were bundled together and measured as a unified variable. This variable represented the respondents' overall objective knowledge of Fairtrade, the Euro Leaf and KRAV. Subjective knowledge, on the other hand, was measured in two different ways. First, by the general question '*How knowledgeable would you say you are about the facts and issues concerning ecolabels?*' stated in the section above. Second, by the question '*How knowledgeable would you say you are about the facts and issues concerning [label]?*'. [label] was replaced with either Fairtrade, Euro Leaf and KRAV depending on which survey the respondents received. Thus, the respondents' subjective knowledge was measured regarding both ecolabels in general, and regarding Fairtrade, the Euro Leaf and KRAV, respectively. Thereby, the variable *Subjective knowledge* was divided into two categories, *general subjective knowledge* and *specific subjective knowledge*. A summary of the variables and corresponding questions are presented in Table 4.

#### **4.4.2 Measuring Discrepancy**

In order to visualize the difference between subjective and objective knowledge, a new variable was constructed. As previously stated, consumers' subjective knowledge was measured by one question on a 7 point Likert scale, while objective knowledge was measured by number of correct answers on nine statements. To enable comparisons between the two different levels of measurement, Z scores were computed for each type of knowledge. Z scores relabels each score in terms of its deviation from the mean and are calculated using the formula  $Z = (x - \text{mean})/\text{standard deviation}$ , where x represents the observed value (Burns and Burns, 2008). The formula provides a score which is comparable to other Z-scores calculated the same way.

The difference between each respondent's subjective and objective knowledge, as measured by their Z scores, represented his or her discrepancy. Positive discrepancy scores implied that the

respondents had higher subjective knowledge than objective knowledge. This means that the respondents overestimated their own knowledge, that is, they believed to be more knowledgeable than they actually were. Negative discrepancy scores indicated that the respondents' subjective knowledge were lower than their objective knowledge. This implies that the respondents underestimated their own knowledge and believed to be less knowledgeable than they actually were.

To allow comparisons to be made between the respondents, and between the three ecolabels, the discrepancy range was split into five equally sized intervals. As the respondents' discrepancy levels ranged between -3,19 to 3,61, each group contained 1,36 units of measurement. As displayed in Table 3, the five groups represented high negative discrepancy, low negative discrepancy, no discrepancy, low positive discrepancy, and high positive discrepancy, respectively.

<b>Discrepancy category</b>	<b>Interval</b>	<b>Interpretation</b>
High negative discrepancy	-3,40 to -2,04	Underestimates knowledge
Low negative discrepancy	-2,04 to -0,68	
No discrepancy	-0,68 to 0,68	Correct knowledge estimation
Low positive discrepancy	0,68 to 2,04	Overestimates knowledge
High positive discrepancy	2,04 to 3,40	

**Table 3.** Discrepancy categories with their respective intervals and interpretation.

#### **4.4.3 Measuring Confusion, Information Acquisition and Amount of Green Purchases**

Both the variables of '*confusion regarding ecolabels*' and '*information acquisition*' were measured through a single statement in the surveys. Confusion was measured through the statement "*I feel confused regarding the meaning of different ecolabels*" where the answers ranged from 1 (*completely disagree*) to 7 (*completely agree*). Information acquisition was measured through the statement "*I have actively searched for information regarding ecolabels at some point in time*" where the possible answers were '*Yes*' and '*No*'.

*Amount of green purchases* was measured through the question "*How many percent of your purchases consists of ecolabelled products in the following product categories?*", followed by the five categories *Fruit and greens, Dairy products, Meat, Fish* and *Staple goods*.

For each category, one of the five percentage intervals below could be chosen:

1: 0 - 20%      2: 20 - 40%      3: 40 - 60%      4: 60 - 80%      5: 80 - 100%

There was also a sixth alternative labelled “*I don’t eat foods from this product category*”. When analysing the gathered data, mean values were calculated for each respondent ranging from 1 to 5. The value 1 represented total green purchases of 0 - 20%, while 5 represented total green purchases of 80 - 100%. Worth noting is that the mean values were rounded to the nearest whole number. For example, 2,95 and 2,65 were rounded to 3, and thereby both fell in the percentage interval of 40 - 60%, despite the former value being higher than the latter. In the cases where respondents answered “*I don’t eat this product category*” the mean was calculated by dividing with the number of provided answers. A summary of the variables with corresponding questions is presented in Table 4.

#### 4.4.4 Summary of Measured Variables

Variable	Question	Answer type
General subjective knowledge	<i>How knowledgeable would you say you are about the facts and issues concerning ecolabels?</i>	Likert scale 1 to 7
Specific subjective knowledge	<i>How knowledgeable would you say you are about the facts and issues concerning [label]?</i>	Likert scale 1 to 7
Objective knowledge	<i>Nine statements about the facts and issues concerning [label].</i>	True/false
Confusion regarding ecolabels	<i>I feel confused regarding the meaning of different ecolabels.</i>	Likert scale 1 to 7
Information acquisition	<i>I have actively searched for information regarding ecolabels at some point in time.</i>	Likert scale 1 to 7
Amount of green purchases	<i>How many percent of your purchases consists of ecolabelled products in the following product categories?</i>	5 percentage intervals

**Table 4.** Variables with their corresponding questions and answer types.

[label] = Fairtrade, Euro Leaf or KRAV depending on what survey the respondents answered.

## 4.5 Validity and Reliability

### 4.5.1 Internal Validity

Internal validity concerns whether the measurements, in this case the questions in the surveys, are accurate measurements of the desired variables (Burns and Burns, 2008). The variables of interest in this study were *subjective knowledge*, *objective knowledge*, *discrepancy*, *confusion*,

*information acquisition* and *green purchases*. In order to ensure internal validity and that the surveys measured the intended variables as accurately as possible, the questions were constructed in accordance with previous literatures' methodology, when possible.

The measurements of objective and subjective knowledge were derived from House et al. (2004). Subjective knowledge was measured as the respondents' assessment of their own knowledge, while objective knowledge was translated from their number of correct answers on nine statements regarding ecolabels. The measurement of objective knowledge had its flaws, as respondents could make correct guesses, even though they were encouraged to skip questions that they did not know the answer to. To counterbalance this imperfection in the method, the study included a large sample of respondents to dilute irregularities across data.

The discrepancy measure was calculated as the difference between subjective and objective knowledge. As these measurements were derived from previous literature (House et al. 2004), the measurement of discrepancy ought to be correct.

Confusion was measured by the respondents' own assessment as they were asked to take a stand regarding the following statement: "*I feel confused regarding the meaning of different ecolabels*". Allowing the respondents to assess their own level of confusion rather than measuring it could have led to reduced validity as it is not a precise measurement. However, the concept of confusion is a subjective term and not easily quantifiable, giving way for a subjective assessment rather than a calculation.

Green purchases and information acquisition were measured by asking the respondents to answer questions linked to each variable in accordance with Aman et al. (2012). Though the respondents' own assessment might not be correct in all cases, this method of data collection is common. The adoption of this procedure should not lower the internal validity.

#### **4.5.2 External Validity**

External validity is the extent to which the results of a study are generalizable to a population other than the studied sample (Burns and Burns, 2008). Including three different labels and conducting tests tied to these naturally had a positive effect on the external validity, increasing the generalizability of the results. In hindsight, this was a necessary procedure as some of the tests were significant in certain labels and insignificant in others. The consumers' specific subjective knowledge and objective knowledge also differed in each respondent group. Thereby, if the study had included only one ecolabel, the results would have been misleading as differences between different ecolabels would not have been visible. Most likely, this would have resulted in incorrect conclusions.

Focusing on young consumers in the age bracket of 18 - 35 reduced the external validity of the study, as the sample disregards a large proportion of the population as a whole. Therefore, no general conclusions tied to the entirety of Swedish consumers could be formulated. When formulating the conclusions, this was taken into consideration. However, this is not to say that

the results are invalid as this age bracket still constitutes a relevant proportion of the population. In addition, this age bracket includes current consumers and future decision makers and influencers. Thereby, the adoption of a long-term perspective was enabled, where the younger sample gives an approximation of future purchasing practices.

The majority of the data was gathered from three cities in Sweden. A more widespread data collection from cities throughout Sweden would have provided more representative data, and in extension more generalizable results.

### **4.5.3 Reliability**

Reliability refers to the degree to which there is an absence of measurement error in a study (Burns and Burns, 2008). There are a few different approaches to determining reliability, the most common one being the internal consistency method with Cronbach's alpha. This test is used to determine a scale's reliability by assessing the commonness of a set of items that measure a particular construct (Burns and Burns, 2008). In this case, Cronbach's alpha was used to measure the reliability and commonness of the statements used to assess the respondents' objective knowledge. The nine statements, though similar across all three surveys, were adjusted to fit with the respective ecolabels. They also followed the same structure, with the same number of questions regarding environmental concerns, social responsibility, and pricing strategies.

Cronbach's alpha was conducted on the nine statements for each survey. The results proved to be exceptionally low, with  $\alpha = 0,018$  for Fairtrade,  $\alpha = 0,210$  for the Euro Leaf, and  $\alpha = 0,182$  for KRAV. After analysing the different statements together with Antonio Marañón, Senior lecturer at the Department of Statistics at Lund University, it was concluded that the nature of the statements explained the low Cronbach's alpha result.

The intended purpose of the nine statements was to measure the respondents' objective knowledge. However, knowledge is a broad concept with many subcategories and is thereby hard to capture. Looking at the statements, outlined in 8.1 Appendix, one can see that their general theme is facts about Fairtrade, but that there are many different dimensions included in knowledge of Fairtrade. The statements include knowledge of regulations and facts concerning *farming, water usage, waste disposal, social responsibility* and *pricing strategies*. Even though all these areas are connected to knowledge of Fairtrade, they evidently are very different from each other. This indicates that despite all of them being about Fairtrade, they are not connected to a single dimension. It is argued that this is the explanation for the low Cronbach's alpha result. In essence, this result only tells us that there is no unifying dimension which covers all of the statements well. This does not imply that the that the statements do not measure objective knowledge accurately.

# 5 Results and Discussion

*In this section, the results from the quantitative study are presented and discussed. First, general data and interesting findings from the three surveys are presented. Thereafter, each hypothesis is tested and discussed in turn. As the discussion is based on the results, which are displayed in tables for each hypothesis, it was determined that presenting the results and discussion in conjunction would facilitate for the reader.*

## 5.1 Data Overview

In Table 5, descriptive data on the total sample of 320 respondents is compiled. In the respective surveys, eight occupation options were given to the respondents. However, as 96,6% of the respondents were either students or employed, the other options were bundled together under the term ‘Other’ in Table 5. This was also the case for other educational levels than bachelor and master, where a great majority of the sample belonged to the two mentioned groups. Some of the respondents had an income above 20 000 SEK per month, but for the purpose of creating a coherent table, these were also bundled together, despite being a slightly larger group. All answer options may be viewed in their entirety in 8.2 Appendix.

<b>Age</b>	Mean	Range	
	27,06	18 - 35	
<b>Gender</b>	Male	Female	Other
	137 (42,7%)	181(56,7%)	2 (0,6%)
<b>Education</b>	Bachelor	Master	Other
	177 (55,3%)	123 (38,4%)	20 (6,3%)
<b>Occupation</b>	Student	Employed	Other
	244 (76,3%)	64 (20,3%)	12 (3,4%)
<b>Income (SEK)</b>	0 – 9 999	10 000 – 19 999	> 20 000
	119 (37,2%)	132 (41,3%)	69 (21,5%)

**Table 5.** Descriptive data on the total sample of 320 respondents.

The most important and interesting variables in this thesis are those that measure subjective knowledge, objective knowledge, attitude towards the different labels, green purchasing behaviour and consumer confusion regarding ecolabels. The mean values and standard deviations for these variables are listed in Table 6.

Variable	Fairtrade (N = 109)		Euro Leaf (N = 106)		KRAV (N = 105)		All groups combined (N = 320)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
General subjective knowledge	-	-	-	-	-	-	3,48	1,515
Specific subjective knowledge	4,31	1,631	2,42	1,662	4,08	1,685	-	-
Objective knowledge	5,28	1,539	3,73	1,935	6,11	1,619	5,03	1,963
Attitude towards the ecolabel	5,56	1,092	4,50	1,062	5,58	1,125	-	-
Consumer confusion regarding ecolabels	-	-	-	-	-	-	4,13	1,530
Amount of green purchases	-	-	-	-	-	-	3,22	1,048

**Table 6.** Mean values and standard deviations for *General subjective knowledge*, *Specific subjective knowledge*, *Objective knowledge*, *Attitude towards the ecolabel*, *Consumer confusion regarding ecolabels* and *Amount of green purchases*. N = 319 for *Amount of green purchases*.

From Table 6, it can be concluded that the respondents believe themselves to have quite low knowledge of ecolabels in general. In terms of specific subjective knowledge, the respondents believe to know most about Fairtrade, followed by KRAV and the Euro Leaf. However, this result does not correspond to the respondents' objective knowledge about the labels. Their objective knowledge is highest regarding KRAV, followed by Fairtrade and the Euro Leaf. The respondents' knowledge, both subjective and objective, is thereby lowest regarding the Euro Leaf.

From the respondents' stated attitude towards the different ecolabels, it can be determined that KRAV is most popular, closely followed by Fairtrade, and the Euro Leaf. The next variable in Table 6, *Consumer confusion regarding ecolabels*, indicates that the respondents' have a medium level of confusion. The last variable, *Amount of green purchases*, indicates that on average, 40 – 60% of the respondent's total purchases consist of ecolabelled goods.

### Discussion of findings

The difference between the Euro Leaf and the other two ecolabels regarding respondents' attitude, as well as their subjective and objective knowledge, could be explained by several reasons. First, the Euro Leaf has only been mandatory in the EU since 2010, as compared to KRAV and Fairtrade which were introduced in 1985 and 1997, respectively. This indicates that consumers have been exposed to the Euro Leaf for a shorter time period. Second, the difference could be due to differences in each organisation's quality and quantity of advertising. The advertising of the three brands fall outside of the scope of this thesis, but the authors of this thesis note that Fairtrade and KRAV have a stronger presence than the Euro Leaf in our local

stores. Third, in the opinion of the authors, KRAV and Fairtrade have well-disposed webpages with easily accessible information. Information about the Euro Leaf is scattered across many different webpages and the main page, belonging to the European Commission, lacks a coherent compilation of the labels' underlying regulations. Furthermore, those who wish to expand their knowledge of the Euro Leaf must read about the laws in their original form, which oftentimes require scientific language skills.

## 5.2 Consumers' Subjective and Objective Knowledge

**H1a: Subjective knowledge is positively correlated to green purchasing behaviour.**

**H1b: Objective knowledge is positively correlated to green purchasing behaviour.**

	Amount of green purchases	
	Pearson Correlation	Sig
<b>Objective knowledge</b>	0,031	n.s.
<b>Subjective knowledge</b>	0,264	0,000**

**Table 7.** Correlation between *Amount of green purchases* and *Objective knowledge* and *Subjective knowledge*, respectively. N = 319. n.s. = not significant ( $p > 0,05$ ). \*\* =  $p < 0,01$ .

Table 7 shows that there is no significant correlation between objective knowledge and green purchasing behaviour. The lack of a significant positive correlation implies that more objective knowledge does not result in greater amounts of green purchases. For subjective knowledge, on the other hand, there is a significant correlation between the two, indicating that higher subjective knowledge leads to more green purchases. The correlation size is low (Burns and Burns, 2008), but nevertheless positive. Therefore, H1a is accepted while H1b is rejected. These results are in line with the findings of Pieniak et al. (2010), who showed that subjective knowledge of organic foods is positively correlated to green purchasing behaviour, while objective knowledge is not.

### Discussion of findings

The authors of this thesis argue that there can be several explanations for why subjective knowledge is positively correlated with green purchasing behaviour. First, it could be that environmentally concerned consumers, who normally buy green products, perceive themselves as knowledgeable. Thereby, it is not their subjective knowledge that influences their green purchasing behaviour, but rather their green purchasing behaviour that leads them to perceive themselves as knowledgeable. This explanation is not far-fetched, considering that consumers who regularly purchase green products ought to be familiar with different ecolabels, and thereby likely perceive themselves as knowledgeable. Contrary, consumers who hardly ever purchase green products are probably unfamiliar with ecolabels, and thereby likely perceive themselves as less knowledgeable.

Second, Sammer and Würstenhagen (2006) stated that ecolabels have a value function, e.g. they bring prestige to the consumer buying the product. This indicates that some consumers' wish

to appear to be environmentally conscious in the eyes of others. Hence, they buy green products as a signal. The ideal image of an environmentally conscious consumer is likely also knowledgeable about what different ecolabels stand for. Thereby, some respondents' might report that their knowledge of ecolabels is high, independent of their actual knowledge.

Third, it could be that consumers' self-constructed ideas are overly optimistic compared to reality. For example, it is true that Euro Leaf certified pork comes from pigs who have spent time outdoors. Upon hearing this, people might imagine pigs roaming free, playing in mud and grass. However, in reality, spending time outdoors simply means that the pigs get to breathe outdoor air, independent of if they are standing on a concrete platform or natural ground (KRAV, 2017). In this case, the imagined picture is a romanticized version of reality. Behind this is a belief that the ecolabels stand for stricter rules than they actually do. If this is a cause for consumers' subjective knowledge, there ought to be discussed whether there are any gains from educating consumers regarding ecolabels. This question is particularly relevant in the light of the result that objective knowledge is not significantly correlated with green purchasing behaviour.

The discussion in the previous sections highlight the need of a more extensive study that further investigates the nature of subjective knowledge and its causes. Gaining insight into the underlying factors influencing consumers' subjective knowledge ought to be of interest for both ecolabel managers, product managers, and theoreticians. The main contribution of this thesis to this discussion is the finding that subjective knowledge, but not objective, is positively correlated with green purchasing behaviour.

**H2a: Consumers who have actively searched for information regarding an ecolabel have a higher level of subjective knowledge regarding ecolabels, than consumers who have not actively searched for information.**

	<b>I have actively searched for information regarding an ecolabel</b>				
	Yes		No		Sig
<b>Specific subjective knowledge</b>	Mean	SD	Mean	SD	
Fairtrade (N = 109)	3,83	1,497	2,98	1,406	0,003**
Euro Leaf (N = 106)	3,82	1,465	2,90	1,327	0,001**
KRAV (N = 105)	3,90	1,532	3,10	1,511	0,009**

**Table 8.** Mean values and standard deviations in specific subjective knowledge between consumers who have actively searched for information compared to those who have not searched for information, for each ecolabel. \*\* =  $p < 0,01$ .

From Table 8, it is evident that among the respondents who participated in the Fairtrade survey, there are significant mean differences in subjective knowledge between people who have actively searched for information regarding an ecolabel and people who have not actively searched for information. The same is true for the respondents who participated in the Euro Leaf and KRAV surveys, respectively. Worth mentioning is the fact that for all respondent

groups, the number of people who had actively searched for information regarding an ecolabel was roughly the same as the number of people who had not actively searched for information.

Since there are significant results for all three groups, it is possible to determine that people who have actively searched for information regarding one or more ecolabel(s) feel more knowledgeable than those who have never actively searched for information. The null hypothesis of no mean differences is therefore rejected, implying that H2a is accepted. This result is in line with the result of Jin and Han (2014), who determined that more prior knowledge leads to higher subjective knowledge.

**H2b: Consumers who have actively searched for information regarding an ecolabel have a higher level of objective knowledge regarding ecolabels, than consumers who have not actively searched for information.**

	<b>I have actively searched for information regarding an ecolabel</b>				
	<b>Yes</b>		<b>No</b>		<b>Sig</b>
<b>Objective Knowledge</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	
Fairtrade (N = 109)	5,25	1,380	5,31	1,756	n.s.
Euro Leaf (N = 106)	3,86	1,797	3,57	2,092	n.s.
KRAV (N = 105)	6,11	1,733	6,02	1,506	n.s.

**Table 9.** Mean differences in objective knowledge between consumers who have actively searched for information compared to those who have not searched for information, for each ecolabel. n.s. = not significant ( $p > 0,05$ ).

From Table 9, it can be concluded there are no significant mean differences between people who have actively searched for information regarding an ecolabel and people who have not actively searched for information in terms of objective knowledge regarding Fairtrade, the Euro Leaf or KRAV. Thereby, H2b is rejected.

### **Discussion of findings**

The results indicate that actively searching for information leads to a feeling of being informed, rather than to actual knowledge. One can only speculate about why gathering of information about an ecolabel does not lead to actual knowledge, but a plausible cause could be the difficulties associated with finding and accessing all relevant information about a particular ecolabel. There are substantial amounts of information behind each label and even if the information is found, it ought to be difficult to memorize all of it. Furthermore, each of the three labels has developed and changed over time. Thereby, the knowledge a consumer gained regarding a particular ecolabel in the past might not be valid or representative of what it stands for today. In this scenario, the consumer would perform badly when tested on his or her knowledge, despite feeling well-informed.

### H3a: Consumers have a discrepancy between their subjective and objective knowledge.

Level of discrepancy (% of sample)	Fairtrade (N = 109)	Euro Leaf (N = 106)	KRAV (N = 105)	All groups combined (N = 320)
High negative discrepancy	5,5%	2,8%	5,7%	4,7%
Low negative discrepancy	25,7%	28,3%	21,9%	25,3%
No discrepancy	42,2%	33,0%	52,4%	42,5%
Low positive discrepancy	21,1%	31,1%	12,4%	21,6%
High positive discrepancy	5,5%	4,7%	7,6%	5,9%
Total	100%	100%	100%	100%

**Table 10.** Proportion of each groups' discrepancy levels by ecolabel and discrepancy group.

Looking at the discrepancy levels in the Table 10 above, some clear results are distinguishable. Among the respondents in total, 42,5% of the consumers had no discrepancy between their subjective and objective knowledge. This implies that a majority of the respondents had either a positive or negative discrepancy, meaning that they could not correctly estimate their own knowledge of ecolabels. 30,0% had a low or high *negative* discrepancy, while 27,5% had a low or high *positive* discrepancy. These results are in line with Taylor and Brown (1988), who stated that some consumers tend to underestimate their own level of knowledge, while other consumers tend to overestimate their own level of knowledge.

Comparing the respondents' discrepancies regarding the three ecolabels, it is evident that consumers are better at estimating their own knowledge regarding KRAV, compared to the other two ecolabels. 52,4% of the KRAV respondents had no discrepancy, while the same numbers were 42,2% and 33,0% for Fairtrade and the Euro Leaf, respectively.

Looking at the percentages of consumers who overestimates their knowledge (positive discrepancy) compared to those who underestimate their knowledge (negative discrepancy), these appear to be roughly equal in size. The main difference is that the respondents of the KRAV and Fairtrade survey had less positive discrepancy compared to the Euro Leaf.

In light of the results presented above, it can be concluded that there are discrepancies between consumers' subjective and objective knowledge. H3a is therefore accepted.

### H3b: Consumers with different levels of discrepancy purchase different amounts of green products.

To investigate how consumers' knowledge discrepancy affects their green purchasing behaviour, descriptive statistics for *Amount of green purchases* was computed for respondents with negative discrepancy, no discrepancy, and positive discrepancy. The result is displayed in Table 11.

Green purchases groups	Discrepancy groups		
	Negative discrepancy	No discrepancy	Positive discrepancy
Low amount of green purchases (0 – 40%)	26 27,4%	35 25,7%	19 21,6%
Medium amount of green purchases (40 – 60%)	26 27,4%	49 36,0%	26 29,5%
High amount of green purchases (60 – 100%)	43 45,3%	52 38,2%	43 48,9%

**Table 11.** Frequency and percentage of the respondents' amount of green purchase for each discrepancy group. As the respondents reported their amount of green purchases in five intervals, there was no simple way to divide them into three groups, though this was desired to create a coherent table. Thereby, it was determined that low amount of green purchases was 0 – 40% ecolabelled products, while medium amount was 40 – 60% ecolabelled products, and high amount was 60 – 100%. Similar results were attained for other categorisations. N = 319.

The division between the different green purchasing groups in Table 11 appear to be roughly equal. This suggest that there are no differences in purchasing behaviour for respondents with negative discrepancy, no discrepancy and positive discrepancy. Thereby, the results indicate that purchase behaviour is non-dependent on discrepancy level. This means that consumers will purchase similar amounts of green products, regardless of whether they overestimate or underestimate their own knowledge. H3b is therefore rejected.

### Discussion of findings

Taylor and Brown (1988) argued that consumers who perceive themselves to be less knowledgeable (negative discrepancy) will use this as an excuse to purchase less green products and foist the environmental responsibility on others. The results presented above are not in line with this argumentation, as the respondents who underestimated their own knowledge (negative discrepancy) purchased the same amount of green products as those who overestimated their own knowledge (positive discrepancy). Thereby, the results from this hypothesis contradict the results of Taylor and Brown (1988). One can however argue that this particular result from Taylor and Brown's (1988) study might be outdated. Consumers purchasing behaviour has perhaps changed since their study was conducted, which would explain the different results.

## 5.3 Consumer Confusion Regarding Ecolabels

**H4: Consumers with a low level of objective knowledge regarding ecolabels are more confused than consumers with a high level of objective knowledge regarding ecolabels.**

In this hypothesis, it was necessary to create two groups, consisting of respondents with low or high objective knowledge regarding ecolabels, respectively. Since there were nine statements, it was not possible to make an even split. Five was the middle value, and the issue was thereby to determine if the respondents with five correct answers ought to belong to the group with low or high objective knowledge. After reviewing the data, it was concluded that the two groups

would be roughly equal in size for all ecolabels if five correct answers were considered as high objective knowledge. Thereby, this option was chosen, to minimize errors due to skewed group sizes.

<b>Objective knowledge regarding ecolabels</b>					
<b>Confusion regarding ecolabels</b>	Low (<5)		High (5 ≥)		Sig
	Mean	SD	Mean	SD	
Fairtrade (N = 109)	4,03	1,375	4,41	1,420	n.s.
Euro Leaf (N = 106)	4,18	1,648	4,04	1,331	n.s.
KRAV (N = 105)	3,67	1,715	4,02	1,642	n.s.

**Table 12.** Mean differences in level of confusion regarding ecolabels between respondents with low objective knowledge (less than five correct answers) and respondents with high objective knowledge (five or more correct answers), for each ecolabel. n.s. = not significant ( $p > 0,05$ ).

From Table 12 above, it can be concluded that respondents with a low level of objective knowledge about Fairtrade are not significantly more confused than respondents with a high level of objective knowledge about Fairtrade. This is also true regarding objective knowledge about the Euro Leaf and KRAV. Thereby, the data from the three groups of respondents indicates that objective knowledge regarding ecolabels does not influence consumers' perceived confusion regarding ecolabels. H4 is therefore rejected.

### **Discussion of findings**

Though level of objective knowledge does not seem to influence confusion, it is still true that most consumers feel confused regarding what different ecolabels stand for. The gathered data showed that 50,6% of the respondents to the Fairtrade survey agreed with the statement "*I feel confused regarding the meaning of different ecolabels.*". The same numbers for the Euro Leaf and KRAV were 43,3% and 39,0%, respectively. Thus, as low objective knowledge does not seem to cause confusion among consumers, the conclusion must be drawn that the cause is something other than lack of knowledge. The most probable cause is likely ecolabel profusion, which has been suggested by many authors as the most important cause for consumer confusion regarding ecolabels (Harbaugh et al., 2011; Brécard, 2014; Ben Youssef and Abderrazak, 2009; Comas Marti and Serifert, 2012).

**H5: Perceived confusion regarding ecolabels is negatively correlated with amount of green purchases.**

<b>Confusion regarding ecolabels</b>		
	<b>Pearson Correlation</b>	<b>Sig</b>
<b>Amount of green purchases</b>	-0,114	0,043*

**Table 13.** Correlation between *Amount of green purchases* and *Confusion regarding ecolabels*. *Amount of green purchases* was split into five groups (0-20%, 20-40%, 40-60%, 60-80% and 80-100% ecolabelled goods out of all purchases) while *I feel confused regarding the meaning of ecolabels* was split into three groups (representing low, medium and high confusion). N = 319. \* =  $p < 0,05$ .

From Table 13 above, it can be determined that consumer confusion is negatively correlated with consumers' amount of green purchases. The correlation size is slight (Burns and Burns, 2008), but significant. Thereby, the null hypothesis of no correlation is rejected, and consequently H5 is accepted. This implies that consumers' green purchasing behaviour could be influenced by how confused they feel concerning the meaning of ecolabels. In other words, confusion is likely a barrier which inhibits consumers from buying green products. This result is in line with previous studies, which have suggested that confusion hinders adoption of green purchasing practices (Gracia and de Magistris, 2008; Rahbar and Abdul Wahid, 2011; D'Souza et al., 2006; Sammer and Wüstenhagen, 2006).

### **Discussion of findings**

Despite the result being in line with previous research, the authors of this thesis note that confusion is hard to measure. Consumers' perceived confusion most likely varies depending on factors such as for example situation and mood. Thereby, the level of confusion that the respondents estimated when they responded to the survey might not be the same as the confusion experienced in the purchase situation. Furthermore, just one question might not be enough to correctly assess a consumers' level of confusion. A different measurement of confusion could therefore possibly have provided different results. In the light of this criticism, the authors of this thesis argue that further studies on the topic of confusion and green purchases ought to be conducted.

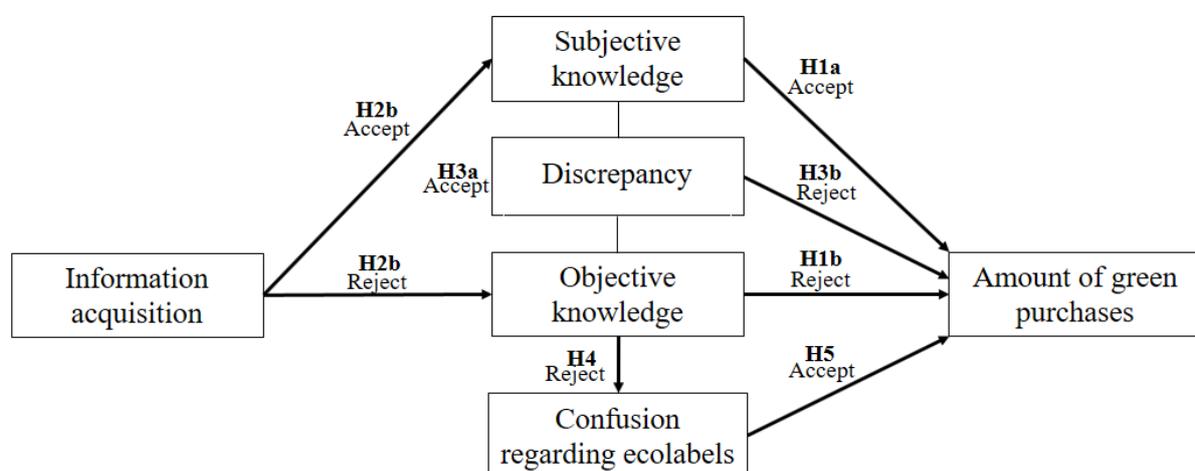
Though outside the scope of this thesis, it is also worth noting that confusion, i.e. being unable to understand the ecolabels' differences, prevents consumers from realizing which ecolabel they should prioritize. The stated confusion among consumers could lead them to choose inferior ecolabelled products without knowing that there are better alternatives. The result is a situation where the development of better ecolabels potentially stagnates as consumers' confusion leads them to purchase products marked with lesser ecolabels. Reducing consumers' confusion regarding ecolabels could therefore lead not only to more green purchases, but perhaps also to more purchases of products with ecolabels with tough requirements.

## 5.4 Summary of Results

Compiled in Table 14 below are the hypotheses tested in the sections above, and their respective results. The results are further visualised in Figure 3.

Hypothesis	Result
<b>H1a:</b> Subjective knowledge is positively correlated to green purchasing behaviour.	Accept
<b>H1b:</b> Objective knowledge is positively correlated to green purchasing behaviour.	Reject
<b>H2a:</b> Consumers who have actively searched for information regarding an ecolabel have a higher level of subjective knowledge regarding ecolabels, than consumers who have not actively searched for information.	Accept
<b>H2b:</b> Consumers who have actively searched for information regarding an ecolabel have a higher level of objective knowledge regarding ecolabels, than consumers who have not actively searched for information.	Reject
<b>H3a:</b> Consumers have a discrepancy between their subjective and objective knowledge.	Accept
<b>H3b:</b> Consumers with different levels of discrepancy purchase different amounts of green products.	Reject
<b>H4:</b> Consumers with a low level of objective knowledge regarding ecolabels are more confused than consumers with a high level of objective knowledge regarding ecolabels.	Reject
<b>H5:</b> Perceived confusion regarding ecolabels is negatively correlated with amount of green purchases.	Accept

**Table 14.** Summary of acceptance/rejection of hypotheses



**Figure 3.** Visualization of acceptance/rejection of hypotheses.

# 6 Conclusion

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## 6.1 Research Aims

The main aim of this thesis was to identify young Swedish consumers' knowledge about ecolabels and, by extension, how it affects their green purchasing behaviour of food products. Analysis of data from the three different surveys showed that Swedish consumers are rather knowledgeable, in terms of objective knowledge, regarding KRAV and Fairtrade. However, the Swedish consumers are comparably less well-informed regarding the Euro Leaf. It was discussed that this difference could be due to the fact that the Euro Leaf has only been present in the Swedish market since 2010, while KRAV was introduced in 1985 and Fairtrade was introduced in 1997. Another potential explanation could be differences in each organisation's quality and quantity of advertising. Lastly, it was suggested that the user-friendliness of the organisation's webpages, and the information provided through these, could cause the differences in objective knowledge regarding each ecolabel.

The second part of the first aim, how the consumers' knowledge affects their purchasing behaviour, has also been investigated. The results in regards to this question showed that subjective knowledge is positively correlated to green purchasing behaviour on a significant level. Objective knowledge, on the other hand, is not at all correlated to green purchasing behaviour. This indicates that consumers' perception of themselves as knowledgeable is more important than their actual knowledge regarding their green consumption of food products. These results are in line with previous research by Pieniak et al. (2010).

The second aim of this thesis was to identify if low levels of knowledge about ecolabels is correlated with consumer confusion. Analysis of the gathered data showed that this is not the case. Consumers with a low level of objective knowledge regarding ecolabels are not significantly more confused than consumers with a high level of objective knowledge regarding ecolabels. At the same time, a large number of respondents stated that they feel confused. This indicates that consumers are confused, but that educating them about ecolabels is not a means to reduce confusion. Instead, the profusion of ecolabels ought to be dealt with, as this has been identified by several researchers as a main cause for consumer confusion regarding ecolabels (Ben Youssef and Abderrazak, 2009; Brécard, 2014; Comas Marti and Serifert, 2012; Harbaugh et al., 2011).

The third and final aim of this thesis was to identify whether confusion is a cause for why products bearing ecolabels are not bought. Analysis of the gathered data showed that perceived consumer confusion regarding ecolabels is negatively correlated with amount of green purchases. This indicates that when consumers feel less confused regarding ecolabels, they buy more green products. The result is in line with previous research (Gracia and de Magistris, 2008; Rahbar and Abdul Wahid, 2011; D'Souza et al., 2006; Sammer and Wüstenhagen, 2006).

## 6.2 Theoretical contributions

Academic studies regarding Swedish consumers' knowledge of ecolabels are lacking in the current body of literature. This study aimed to contribute to closing this gap in existing theory by investigating young Swedish consumers' knowledge of ecolabels, and by extension, how it influences their green purchasing behaviour.

Previous studies have investigated different areas of knowledge connected to sustainability (Pieniak et al., 2010; Thøgersen et al., 2010; House et al., 2004; D'Souza et al., 2007). These studies have presented contradicting results, highlighting that knowledge regarding suitability is a broad and complex topic. The authors of this thesis suggest that rather than studying single knowledge dimensions, a wider measurement that includes a multitude of dimensions ought to better reflect reality, and thereby more accurately measure how knowledge effect green purchasing behaviour. In this thesis, knowledge was measured regarding ecolabels, which encapsulate more than one dimension of knowledge. Through this procedure, this study has contributed to the theoretical field of knowledge by studying several knowledge areas and their connection to purchasing behaviour.

It has been stated that there is not enough research on ecolabels' effect on consumer purchasing behaviour (Testa et al., 2013). This thesis contributes to this body of literature. Furthermore, the results from H1 showed that consumers' subjective knowledge influences consumers' green purchasing behaviour, while objective knowledge does not. This result was in line with (Pieniak et al., 2010), who researched subjective and objective knowledge of organic foods. Thereby, research regarding two different areas of knowledge has reached the same conclusion. This indicates further generalisations regarding the influence of subjective knowledge on purchase behaviour are supported.

The results of H2 showed that consumers subjective knowledge of ecolabels increased with information acquisition, while objective knowledge did not. These results are in line with Jin and Han (2014) and contributes to the existing research regarding information's effect on consumers' knowledge. The findings from H3 showed that knowledge discrepancies are common among young Swedish consumers. However, the respondents' tendency to underestimate or overestimates their own knowledge of ecolabels did not seem to affect their amount of green purchases. This contradicted previous theories that argued for consumers who underestimate their knowledge buying less green products (Taylor and Brown, 1988).

The results of H4 showed that consumers with low levels of objective knowledge do not feel more confused regarding ecolabels than consumers with high levels of objective knowledge. To the best of the authors' knowledge, this relationship between objective knowledge and confusion regarding ecolabels had not been investigated before. Thereby, a theoretical contribution of this thesis is the finding that that educating consumers regarding ecolabels does not seem to be a means to reduce consumer confusion.

Finally, the results of H5 showed that confusion regarding ecolabels is negatively correlated with amount of green purchases among young consumers in Sweden. This finding supports previous research (Gracia and de Magistris, 2008; Rahbar and Abdul Wahid, 2011; D'Souza et al., 2006; Sammer and Wüstenhagen, 2006) and further indicates that confusion regarding ecolabels is an issue that is independent of cultural context.

### 6.3 Practical Implications

In this thesis, it has been concluded that objective knowledge is not correlated to green purchasing behaviour. In addition, it has also been determined that objective knowledge does not seem to be a means to reduce confusion regarding ecolabels. Nevertheless, there seems to be an unmistakable demand among consumers for objective knowledge. 87% of the respondents to the Fairtrade survey, 87% of the respondents to the Euro Leaf survey, and 80% of the respondents to the KRAV survey agreed with the statement *“I would like information of ecolabels to be more easily accessible, e.g. in the store.”*. This implies that consumers would like to be more well-informed, or knowledgeable, regarding ecolabels. In the light of this information, there seems to be a conflict between consumers' demand for objective knowledge and the lack of gains made by providing consumers with more information.

However, the findings in this thesis also showed that subjective knowledge is positively correlated with green purchasing behaviour. Thereby, it seems to be more beneficial to increase consumers' subjective knowledge, rather than their objective knowledge. This may be brought about by ecolabel managers and product managers encouraging consumers to look for information regarding ecolabels on their own. When consumers look for information, they likely embrace information that interests them or fits with their values and beliefs. This indicates that they might gain in-depth knowledge within certain areas, while remaining ignorant regarding other aspects of the ecolabel. This, in turn, indicates that they would perform badly if tested on their objective knowledge. Nevertheless, the findings in this thesis indicate that consumers who have actively searched for information regarding an ecolabel feel more knowledgeable. Thereby, encouraging consumers to engage in information search would to some extent satisfy their demand for knowledge, and result in more green purchases.

In this thesis, the findings also showed that consumers with a low level of objective knowledge regarding ecolabels are not significantly more confused than consumers with a high level of objective knowledge regarding ecolabels. Thus, increasing objective knowledge is not a means to reduce consumer confusion. At the same time, many consumers feel confused. Perceived confusion is also negatively correlated to green purchasing behaviour, indicating that the more confused consumers feel, the less green food products they purchase. Thereby, it is in the interest of ecolabel managers and product managers to reduce consumer confusion regarding ecolabels. How this can be done has not been investigated in this thesis, but previous literature has suggested that ecolabel profusion is the main cause for consumer confusion (Brécard, 2014). Reducing the number of ecolabels is thereby desirable, though surely difficult to accomplish. A possible solution could be for policy makers to publicly endorse certain ecolabels, and encourage storeowners to highlight the same brands in-store. This would serve

as a quality marking that would help consumers know what ecolabels to trust and look for. This could perhaps reduce consumer confusion, and by extension, increase green purchasing practices.

## **6.4 Limitations and Suggestions for Future Research**

Many of the findings in this study were clear and in accordance with previous literature. Despite this, the causes behind some of them could not be explained by the data. In particular, the underlying reasons for subjective knowledge are unclear, as well as the reasons why objective knowledge is not correlated to green purchasing behaviour. Why knowledge discrepancies exist and how these affect consumer behaviour is also uncertain. Though it is possible to speculate regarding the underlying causes, determining them in a scientific manner would enable better and more accurate understanding of the findings. The speculative nature regarding the causes behind the aforementioned concepts is thus considered the greatest limitation of this study. However, in the light of this conclusion, several suggestions for interesting future research areas are uncovered.

First, the authors of this thesis argue that there is a need for further research regarding subjective knowledge. As subjective knowledge appears to influence consumers' green purchasing behaviour, it ought to be of interest for both managers and theoreticians to gain deeper insights into its nature and causes. Future researchers may also distinguish between positive subjective knowledge, i.e. when the consumers' perceived image is better than reality, and negative subjective knowledge, i.e. when the consumers' perceived image is worse than reality. In this thesis, no such distinction was made, even though the authors of this thesis are inclined to believe that the respondents' subjective knowledge was largely positive given its positive correlation to green purchases.

Second, it ought to be investigated why objective knowledge regarding ecolabels is not correlated to green purchasing behaviour. The lack of correlation between these two variables is rather counter-intuitive, and thereby, it would be interesting to further investigate the role of objective knowledge for consumers' purchasing behaviour.

Third, the causes and effects of consumers' discrepancies between subjective and objective knowledge ought to be investigated. In this thesis, it has merely been concluded that people often underestimate or overestimate their own level of knowledge. What causes discrepancies ought to be an interesting topic for theoreticians within the research field of psychology. The possible effects of discrepancies are further of interest for consumer behaviour researchers.

Fourth, the authors of this thesis propose that future research should investigate how consumer confusion should be measured. In this thesis, it has been concluded that confusion among consumers regarding ecolabels is hard to measure due to its subjective nature. A coherent measure is desirable, as it would provide more reliable results and allow better comparisons between different studies.

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# 8 Appendix

## 8.1 Objective knowledge statements

### 8.1.1 Fairtrade

<b>Objective knowledge</b>	
<b>Question(s)</b>	1. Fairtrade stands for ecological farming which means, among other things, that no pesticides or artificial fertilizers are allowed in the production. (False)
	2. Fairtrade's set of rules contains regulations concerning usage of water resources. (True)
	3. Fairtrade's set of rules prohibits the usage of genetically modified organisms (GMO) in the production. (True)
	4. Fairtrade's set of rules contains requirements of correct disposal of production waste. (True)
	5. Fossil fuels are not allowed in production at Fairtrade certified farms. All fuel must come from renewable energy sources. (False)
	6. According to Fairtrade's rule book, buyers must give producers payment in advance if they ask for it. (True)
	7. Women employed at Fairtrade farms in developing countries are given the opportunity to higher education. (True)
	8. 1% of the income from Fairtrade products are donated to non-profit organizations working for equality and fair employment in the farming industry in developing countries. (False)
	9. Fairtrade certified products are typically slightly more expensive than other non-certified products. (True)
<b>Answer type</b>	True/False

## 8.1.2 The Euro Leaf

<b>Objective knowledge</b>	
<b>Question(s)</b>	1. The Euro Leaf stand for that at least 95% of the ingredients in a product are ecologically produced. (True)
	2. Euro Leaf-hogs are allowed outside where they can grub the ground and roll around in the mud. (False)
	3. It is mandatory for ecological products produced within the EU to be labelled with the Euro Leaf. (True)
	4. The only difference between the Euro Leaf and KRAV is that KRAV is a Swedish label while the Euro Leaf is a label provided by the European Union. (False)
	5. The Euro Leaf strives for that the climate should be prioritized at EU-leaf-certified farms. Amongst other things, the farmers need to streamline their energy consumption, use renewable energy sources and learn eco-driving. (False)
	6. Fossil fuels are not allowed in production at Euro Leaf-certified farms. All fuel must come from renewable energy sources. (False)
	7. The Euro Leaf's rule book contains regulations concerning discrimination. (False)
	8. 1% of the income from products labelled with the Euro Leaf is put into EU's activities aimed towards improving sustainable food production. (False)
	9. Euro Leaf-certified products are typically slightly more expensive than other non-certified products (True)
<b>Answer type</b>	True/False

## 8.1.3 KRAV

<b>Objective knowledge</b>	
<b>Question(s)</b>	1. KRAV stands for ecological farming which means, among other things, that no pesticides or artificial fertilizers are allowed in the production. (True)
	2. KRAV-hogs are allowed outside where they can grub the ground and roll around in the mud. (True)
	3. The only difference between KRAV and the Euro Leaf is that KRAV is a Swedish label while the Euro Leaf is a label provided by the European Union. (False)
	4. KRAV meets all the regulations in the Euro Leaf concerning ecological production. (True)
	5. KRAV strives for that the climate should be prioritized at KRAV-certified farms. Amongst other things, the farmers need to streamline their energy consumption, use renewable energy sources and learn eco-driving. (True)
	6. Fossil fuels are not allowed in production at KRAV-certified farms. All fuel must come from renewable energy sources. (False)
	7. KRAV-certified producers donates 1% of their income to research aimed towards sustainable food production. (False)
	8. KRAV's rule book contains regulations concerning discrimination. (True)
	9. KRAV-certified products are typically slightly more expensive than other non-certified products (True)
<b>Answer type</b>	True/False

## 8.2 Surveys

### 8.2.1 Fairtrade Survey

**1. Please mark the importance of the following product characteristics in your purchase decision. 1 star means that the product characteristic is of little importance while 7 stars mean it is of outmost importance.** (7 point Likert scale for each category)

- Ecolabelled
- Expiry date
- Locally produced
- Low price
- Country of origin

**2. Ecolabels often gives me guidance when choosing product.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**3. I have actively searched for information regarding ecolabels at some point in time.**

- Yes/No

**4. I find information of ecolabels to be easily accessed.**

- Yes/No

**5. I would prefer if information of ecolabels was more easily accessible, i.e. in store.**

- Yes/No

**6. How knowledgeable would you say you are about the facts and issues concerning ecolabels?** (7 point Likert scale)

- 1 = Not at all knowledgeable
- 7 = Extremely knowledgeable

**7. I feel confused regarding the meaning of different ecolabels.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**8. The higher price on ecolabelled products makes me prioritize other, non- labelled products when shopping.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**9. How many percent of your purchases consists of ecolabelled products in the following product categories?"** (5 intervals: [0-20%] [20-40%] [40-60%] [60-80%] [80-100%] for each category)

- Fruit and greens
- Dairy products
- Meat
- Fish
- Staple goods

**10. I recognize this ecolabel.**



- Yes/No

**11. The logo pictures the Fairtrade ecolabel. I have good knowledge of Fairtrade and what the ecolabel stands for.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**12. My impression of Fairtrade is...** (7 point Likert scale)

- 1 = Very negative
- 7 = Very positive

**You will now be presented with statements regarding Fairtrade. Please fill out whether you believe the statement to be TRUE or FALSE. Try to answer the statements even though you feel unsure. If you can't answer a statement, leave it BLANK and proceed to the next.**

**13. Fairtrade stands for ecological farming which means, among other things, that no pesticides or artificial fertilizers are allowed in the production.**

- True/False

**14. Fairtrade's set of rules contains regulations concerning usage of water resources.**

- True/False

**15. Fairtrade's set of rules prohibits the usage of gene modified organisms (GMO) in the production.**

- True/False

**16. Fairtrade's set of rules contains requirements of correct disposal of production waste.**

- True/False

**17. Fossil fuels are not allowed in production at Fairtrade certified farms. All fuel must come from renewable energy sources.**

- True/False

**18. According to Fairtrade's rule book, buyers must give producers payment in advance if they ask for it.**

- True/False

**19. Women employed at Fairtrade farms in developing countries are given the opportunity to further education.**

- True/False

**20. 1% of the income from Fairtrade products are donated to non-profit organizations which works for equality and fair employment in the farming industry in developing countries.**

- True/False

**21. Fairtrade certified products are typically slightly more expensive than other non-certified products.**

- True/False

**Here are the correct answers to the statements above.**

13. Fairtrade stands for ecological farming which means, among other things, that no pesticides or artificial fertilizers are allowed in the production. (False)

14. Fairtrade's set of rules contains regulations concerning usage of water resources. (True)

15. Fairtrade's set of rules prohibits the usage of gene modified organisms (GMO) in the production. (True)

16. Fairtrade's set of rules contains requirements of correct disposal of production waste. (True)

17. Fossil fuels are not allowed in production at Fairtrade certified farms. All fuel must come from renewable energy sources. (False)

18. According to Fairtrade's rule book, buyers must give producers payment in advance if they ask for it. (True)

19. Women employed at Fairtrade farms in developing countries are given the opportunity to further education. (True)

20. 1% of the income from Fairtrade products are donated to non-profit organizations which works for equality and fair employment in the farming industry in developing countries. (False)

21. Fairtrade certified products are typically slightly more expensive than other non-certified products. (True)

**22. After indulging in the information above, my impression of Fairtrade is... (7 point Likert scale)**

- 1 = Very negative
- 7 = Very positive

**Now follows some questions about you.**

**23. What gender do you identify as?**

- Man/Woman/Other

**24. What year were you born?** The respondents fill out their birth year.

**25. What is your highest started educational level?**

- Grade school
- High school
- Bachelor studies
- Masters studies
- Doctorate studies

**26. What is your main occupation?**

- Student
- Unemployed
- Employed
- Leave of absence
- Housewife/ houseman
- On parental leave
- Retired
- Other

**27. What is your current income? (SEK per month)**

- 0 – 9 999
- 10 000 - 19 999
- 20 000 - 29 000
- 30 000 – 39 999

- 40 000 – 49 999
- 50 000 – 59 999
- 60 000 +

## 8.2.2 Euro Leaf Survey

**1. Please mark the importance of the following product characteristics in your purchase decision. 1 star means that the product characteristic is of little importance while 7 stars mean it is of utmost importance. (7 point Likert scale for each category)**

- Ecolabelled
- Expiry date
- Locally produced
- Low price
- Country of origin

**2. Ecolabels often gives me guidance when choosing product. (7 point Likert scale)**

- 1 = Completely disagree
- 7 = Completely agree

**3. I have actively searched for information regarding ecolabels at some point in time.**

- Yes/No

**4. I find information of ecolabels to be easily accessed.**

- Yes/No

**5. I would prefer if information of ecolabels was more easily accessible, i.e. in store.**

- Yes/No

**6. How knowledgeable would you say you are about the facts and issues concerning ecolabels? (7 point Likert scale)**

- 1 = Not at all knowledgeable
- 7 = Extremely knowledgeable

**7. I feel confused regarding the meaning of different ecolabels. (7 point Likert scale)**

- 1 = Completely disagree
- 7 = Completely agree

**8. The higher price on ecolabelled products makes me prioritize other, non- labelled products when shopping. (7 point Likert scale)**

- 1 = Completely disagree
- 7 = Completely agree

**9. How many percent of your purchases consists of ecolabelled products in the following product categories?" (5 intervals: [0-20%] [20-40%] [40-60%] [60-80%] [80-100%] for each category)**

- Fruit and greens
- Dairy products
- Meat
- Fish
- Staple goods

**10. I recognize this ecolabel.**



- Yes/No

**11. The logo pictures the Euro Leaf ecolabel. I have good knowledge of the Euro Leaf and what the ecolabel stands for. (7 point Likert scale)**

- 1 = Completely disagree
- 7 = Completely agree

**12. My impression of the Euro Leaf is... (7 point Likert scale)**

- 1 = Very negative
- 7 = Very positive

**You will now be presented with statements regarding the Euro Leaf. Please fill out whether you believe the statement to be TRUE or FALSE. Try to answer the statements even though you feel unsure. If you can't answer a statement, leave it BLANK and proceed to the next.**

**13. The Euro Leaf stand for that at least 95% of the ingredients in a product are ecologically produced.**

- True/False

**14. Euro Leaf-certified hogs are allowed outside where they can grub the ground and roll around in the mud.**

- True/False

**15. It is mandatory for ecological products produced within the EU to be labelled with the Euro Leaf.**

- True/False

**16. The only difference between the Euro Leaf and KRAV is that KRAV is a Swedish label while the Euro Leaf is a label provided by the European Union.**

- True/False

**17. The Euro Leaf strives for that the climate should be prioritized at Euro Leaf- certified farms. Amongst other things, the farmers need to streamline their energy consumption, use renewable energy sources and learn eco- driving.**

- True/False

**18. Fossil fuels are not allowed in production at Euro Leaf- certified farms. All fuel must come from renewable energy sources.**

- True/False

**19. The Euro Leaf's rule book contains regulations concerning discrimination.**

- True/False

**20. 1% of the income from products labelled with the Euro Leaf is put into EU's activities aimed towards improving sustainable food production.**

- True/False

**21. Euro Leaf- certified products are typically slightly more expensive than other non-certified products.**

- True/False

**Here are the correct answers to the statements above.**

13. The Euro Leaf stand for that at least 95% of the ingredients in a product are ecologically produced (True)

14. Euro Leaf- hogs are allowed outside where they can grub the ground and roll around in the mud. (False)

15. It is mandatory for ecological products produced within the EU to be labelled with the Euro Leaf. (True)

16. The only difference between the Euro Leaf and KRAV is that KRAV is a Swedish label while the Euro Leaf is a label provided by the European Union. (False)

17. The Euro Leaf strives for that the climate should be prioritized at EU-leaf- certified farms. Amongst other things, the farmers need to streamline their energy consumption, use renewable energy sources and learn eco- driving. (False)

18. Fossil fuels are not allowed in production at Euro Leaf- certified farms. All fuel must come from renewable energy sources. (False)

19. The Euro Leaf's rule book contains regulations concerning discrimination. (False)

20. 1% of the income from products labelled with the Euro Leaf is put into EU's activities aimed towards improving sustainable food production. (False)

21. Euro Leaf-certified products are typically slightly more expensive than other non-certified products (True)

**22. After indulging in the information above, my impression of the Euro Leaf is... (7 point Likert scale)**

- 1 = Very negative
- 7 = Very positive

**Now follows some questions about you.**

**23. What gender do you identify as?**

- Man/Woman/Other

**24. What year were you born?** The respondents fill out their birth year.

**25. What is your highest started educational level?**

- Grade school
- High school
- Bachelor studies
- Masters studies
- Doctorate studies

**26. What is your main occupation?**

- Student
- Unemployed
- Employed
- Leave of absence
- Housewife/ houseman
- On parental leave
- Retired
- Other

**27. What is your current income? (SEK per month)**

- 0 – 9 999
- 10 000 - 19 999

- 20 000 - 29 000
- 30 000 – 39 999
- 40 000 – 49 999
- 50 000 – 59 999
- 60 000 +

### 8.2.3 KRAV Survey

**1. Please mark the importance of the following product characteristics in your purchase decision. 1 star means that the product characteristic is of little importance while 7 stars mean it is of outmost importance.** (7 point Likert scale for each category)

- Ecolabelled
- Expiry date
- Locally produced
- Low price
- Country of origin

**2. Ecolabels often gives me guidance when choosing product.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**3. I have actively searched for information regarding ecolabels at some point in time.**

- Yes/No

**4. I find information of ecolabels to be easily accessed.**

- Yes/No

**5. I would prefer if information of ecolabels was more easily accessible, i.e. in store.**

- Yes/No

**6. How knowledgeable would you say you are about the facts and issues concerning ecolabels?** (7 point Likert scale)

- 1 = Not at all knowledgeable
- 7 = Extremely knowledgeable

**7. I feel confused regarding the meaning of different ecolabels.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**8. The higher price on ecolabelled products makes me prioritize other, non-labelled products when shopping.** (7 point Likert scale)

- 1 = Completely disagree
- 7 = Completely agree

**9. How many percent of your purchases consists of ecolabelled products in the following product categories?"** (5 intervals: [0-20%] [20-40%] [40-60%] [60-80%] [80-100%] for each category)

- Fruit and greens
- Dairy products
- Meat
- Fish
- Staple goods

**10. I recognize this ecolabel.**



- Yes/No

**11. The logo pictures the KRAV ecolabel. I have good knowledge of KRAV and what the ecolabel stands for. (7 point Likert scale)**

- 1 = Completely disagree
- 7 = Completely agree

**12. My impression of KRAV is... (7 point Likert scale)**

- 1 = Very negative
- 7 = Very positive

**You will now be presented with statements regarding KRAV. Please fill out whether you believe the statement to be TRUE or FALSE. Try to answer the statements even though you feel unsure. If you can't answer a statement, leave it BLANK and proceed to the next.**

**13. KRAV stands for ecological farming which means, among other things, that no pesticides or artificial fertilizers are allowed in the production.**

- True/False

**14. KRAV-certified hogs are allowed outside where they can grub the ground and roll around in the mud.**

- True/False

**15. The only difference between KRAV and the Euro Leaf is that KRAV is a Swedish label while the Euro Leaf is a label provided by the European Union.**

- True/False

**16. KRAV meets all the regulations in the Euro Leaf concerning ecological production.**

- True/False

**17. KRAV strives for that the climate should be prioritized at KRAV- certified farms. Amongst other things, the farmers need to streamline their energy consumption, use renewable energy sources and learn eco- driving.**

- True/False

**18. Fossil fuels are not allowed in production at KRAV- certified farms. All fuel must come from renewable energy sources.**

- True/False

**19. KRAV- certified producers donates 1% of their income to research aimed towards sustainable food production.**

- True/False

**20. KRAV's rule book contains regulations concerning discrimination.**

- True/False

**21. KRAV- certified products are typically slightly more expensive than other non-certified products**

- True/False

**Here are the correct answers to the statements above.**

13. KRAV stands for ecological farming which means, among other things, that no pesticides or artificial fertilizers are allowed in the production. (True)
14. KRAV- hogs are allowed outside where they can grub the ground and roll around in the mud. (True)
15. The only difference between the Euro Leaf and KRAV is that KRAV is a Swedish label while the Euro Leaf is a label provided by the European Union. (False)
16. KRAV meets all the regulations in the Euro Leaf concerning ecological production. (True)
17. KRAV strives for that the climate should be prioritized at KRAV- certified farms. Amongst other things, the farmers need to streamline their energy consumption, use renewable energy sources and learn eco- driving. (True)
18. Fossil fuels are not allowed in production at KRAV- certified farms. All fuel must come from renewable energy sources. (False)
19. KRAV- certified producers donates 1% of their income to research aimed towards sustainable food production. (False)
20. KRAV's rule book contains regulations concerning discrimination. (True)
21. KRAV- certified products are typically slightly more expensive than other non-certified products (True)

**22. After indulging in the information above, my impression of KRAV is...** (7 point Likert scale)

- 1 = Very negative
- 7 = Very positive

**Now follows some questions about you.**

**23. What gender do you identify as?**

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